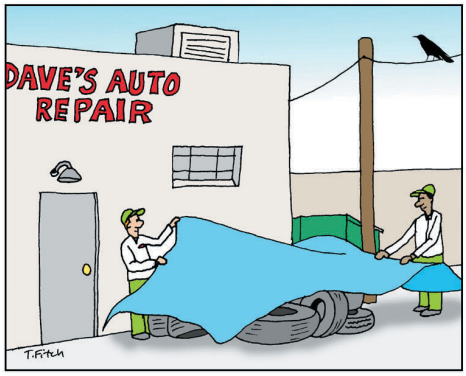
Vehicle Maintenance and Repair



Department of Environmental Protection
Montgomery County Maryland

A cooperative program developed by:
Montgomery County, Maryland
Department of Environmental Protection
Division of Environmental Policy and Compliance

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and Repair Series

Created and Developed by:
Mary Richmond and
David Rotolone,
Montgomery County
Department of Environmental
Protection
Spring 2001
Revised Summer 2002
by: Steve Martin

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Douglas M. Duncan
County Executive

James A. Caldwell
Director

Dear Colleague:

I would like to welcome you to the Environmental Partners Campaign. You are invited to join a dynamic new cooperative pollution prevention program between the Montgomery County Department of Environmental Protection (DEP) and business leaders like yourself, in the vehicle maintenance and repair industry. Our goal is to help your firm save money, time, labor, and resources, while helping to protect and enhance the quality of our environment.

We understand that business owners and managers are concerned with reducing operating costs and liability. We also understand that most companies want to comply with regulatory requirements, but find that staying on top of those requirements and learning about new pollution control strategies and product substitutions can take a substantial amount of time. Thus, the purpose of the Environmental Partners Campaign is to furnish business owners with concise, timely information to help you operate efficiently while doing the right thing for our environment.

DEP is building on County Executive Duncan's vision for environmental protection efforts growing from proactive education and cooperative ventures with our vital business community. Through training and resources, Environmental Partners is interested in helping you address the causes of on-site pollution. DEP offers a ready-made package of current, cost-effective pollution prevention measures, and seeks to work with you to implement some, many, or all of these voluntary actions, depending on your needs and capabilities.

The factsheets and supportive materials in this workbook address a wide range of process and product substitutions beneficial to your bottom line. In addition, we address simple training measures, improved housekeeping policies, and proper reuse and recycling options for a variety of common shop materials. All of the suggestions offered are designed to reduce your inventory of hazardous materials, lower your material storage and disposal costs, as well as the requisite liability and regulatory concerns connected with those materials.

We look forward to sharing this program with you to help you make an important contribution to restoring and preserving the quality of our community. I hope you will complete and return the enclosed Environmental Partners Pledge, and join us in this valuable initiative.

Sincerely,

James A. Caldwell
Director

Office of the Director

255 Rockville Pike, Suite 120 • Rockville, Maryland 20850-2589 • 240/777-7770, FAX 240/777-7765

ENVIRONMENTAL PARTNERS
Montgomery County, Maryland

Pledge for the Vehicle Maintenance and Repair Industry

Your Environmental Partners Pledge represents your commitment to achieve a healthier environment in Montgomery County. Please complete all of the information and include any past pollution prevention activities. Your participation in this program may reduce your costs, regulatory requirements, and increase worker safety and productivity.

Business Name:_____ Telephone: _____

Contact Person:_____ Fax: _____

Address:_____ Email address: _____

Website:_____

Commitment for Environmental Partners:

- ❑ I have committed to abiding by all federal, state, and local environmental regulations. My compliance and pollution prevention inspection was conducted on_____.
- ❑ I would like someone to contact me to help set up my pollution prevention goals.
- ❑ I have determined my pollution prevention goals, and will complete the following pollution prevention activities.

Check one (or more) pollution prevention activities from each category that you will complete:

Process Substitution:

- ❑ Switch from solvent to aqueous parts washers
- ❑ Switch to aqueous brake washing
- ❑ Utilize the 4-step floor cleanup method

Product Substitution:

- ❑ Reduce the use of aerosol cans
- ❑ Substitute non-ozone depleting refrigerants for CFC or HCFC refrigerants
- ❑ Switch to less caustic detergents

Training/Education:

- ❑ Train staff on the spill control and contingency plan
- ❑ Train staff on use of MSDS sheets

Housekeeping:

- ❑ Have appropriate spill kits labeled and available for use
- ❑ Maintain a dry shop
- ❑ Institute an inspection program for leak and spill prevention
- ❑ Cover floor drains

Reuse/Recycling Alternatives:

- ❑ Recycle Antifreeze
- ❑ Recycle Used Motor Oil
- ❑ Proper storage and recycling of batteries
- ❑ Proper tire storage and recycling
- ❑ Recycle washwater from vehicle washing

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Just the Facts About ...

Parts Washing

Vehicle Maintenance and Repair Series

Eliminate Solvents

What's wrong with cleaning solvents? Many cleaning solvents are flammable, produce costly hazardous waste, and are harmful to the health of workers and the environment. Moreover, they are often the largest automotive fluid waste generated in repair shops.

Did you know?

- Cleaning solvents contain volatile organic compounds (VOCs) that contribute to ozone (smog) formation.
- Exposure to solvents and their vapors can lead to cancer, nervous system damage, or skin disorders.
- Many of the solvent cleaning systems generate hazardous waste which place facilities into RCRA requirements. RCRA, the Resource Conservation and Recovery Act, addresses hazardous waste management activities. If your shop generates as little as a half drum of hazardous waste in a month, you are required to follow state hazardous waste requirements for large quantity generators.
- Your shop is responsible for this hazardous waste even after it leaves the shop, which means that you can be charged with penalties and clean-up expense even after the spent solvent has been removed by a licensed hauler.
- In Montgomery County, businesses are required to report quantities of hazardous substances stored at their site, and have a Hazardous Materials Use Certificate from Montgomery County Local Emergency Planning Council (LEPC).
- In Maryland, you cannot use a VOC degreasing material in which the vapor pressure exceeds 1mmHg at 200C (0.019psia), and you must also apply good operating practices, including covering materials to minimize evaporative losses. These practices must be clearly displayed in print where the operator can see them.
- The 1990 Clean Air Act directed EPA to regulate emissions of hazardous air pollutants. In response, EPA issued regulations controlling the use of the halogenated solvents: methlylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride and chloroform. Furthermore, the use of halogenated solvents is completely prohibited in Maryland. Check your *Material Safety Data Sheet* (MSDS) sheet to ensure that you are not using one of the halogenated compounds, cited above and that the vapor pressure meets Maryland requirements.

Effective Alternatives

Using some of the effective alternatives which are readily available, you can reduce the amount of labor previously needed for parts scrubbing, while also reducing the paperwork for materials purchasing, and simplifying the reporting in response to regulatory requirements. For example, there are hundreds of aqueous cleaners on the market. These water-based cleaners contain less than five percent of volatile organic compounds (VOCs) and, unlike petroleum-based solvents, they are typically nonflammable. Aqueous cleaners rely on heat, agitation, and soap action to break grease and dirt into smaller particles. Although they clean differently, aqueous cleaners perform as well as solvents.

Aqueous Cleaning Units

Selecting the appropriate cleaning equipment is critical to successful aqueous cleaning. Most repair shops can use either microbial sink-top units or spray cabinets.

Microbial Sink-top Units

Microbial sink-top units are used for manual parts cleaning in the same way as conventional solvent sink-top units. Microbes present in the aqueous solution degrade oils and organic contaminants, which significantly extends solution life. By extending the life of solution, you will save money by reducing your chemical purchase and waste disposal costs. Additionally, these microbes are safe and pose no risk to technicians. Microbial sink-top units will typically generate:

- Waste solution (only once every several years). In many cases the solution is non-hazardous, although it must be sampled to verify this.
- Used filters (every three weeks to every six months). These may be disposed of as hazardous waste or sampled at least once to determine if filters are non-hazardous.

Spray Cabinets

Aqueous spray cabinets clean parts by spraying high-temperature solution at high pressures within an enclosed cabinet and are available in a full range of capacities from small to extremely large. Spray cabinets will typically generate:

- Waste solution and accumulated sludge (every one to six months). Sample the waste stream at least once to demonstrate that the solution is non-hazardous or send off site as hazardous waste.
- Skimmed oil (every two to eight weeks). Recycle with used motor oil.

Case Studies

The technology cited is present and currently working successfully in Montgomery County. Because the County places a high priority on pollution prevention, and further due to the benefits realized in operational cost, worker safety and health, and environmental protection, the County Department of Public Works purchased a microbial sink-top unit for its Equipment Management Operations Center (EMOC). Patrick Hannah, a Program Manager states, "We are surprised at how well they clean. Right now, we still have both the solvent and microbial machines in the shop, yet all of the mechanics are leaving the solvent machines alone and using the microbial because they work so well and it doesn't dry out their skin." If you would like to schedule a tour of EMOC to observe the sinks in action, or if you have additional questions, concerning these sink top models, contact Mr. Hannah at 240.777.5739.

In addition, Merchant's Tire & Auto Centers, which operates 110 retail automotive service locations throughout the Mid-Atlantic, are making the switch from petroleum-based solvent parts cleaning units to new aqueous parts cleaning units. This translates into the elimination of 36.3 tons of smog forming VOCs from our atmosphere per year - based on the EPA's emission factor of .33 tons/year/unit for cold solvent degreasing units. Merchant's will experience substantial dollar savings annually by making this switch while at the same time furthering their continuing commitment to protect the environment. If you have any questions concerning Merchant's switch to aqueous parts cleaning units, contact the Director of Safety & Environmental Affairs for Merchant's Tire & Auto at 703.368.3171.

Environmental "Paybacks"

By substituting aqueous cleaners and using either a microbial sink-top or a spray cabinet system instead of standard solvents and sink-top units, you would eliminate an equivalent amount of VOCs comparable to the annual emissions of approximately eight automobiles!1

Further, you may reduce the requirements or possibly eliminate the need for Montgomery County's Hazardous Materials Use Certificate (See the information regarding *Local Emergency Planing Council*, LEPC, in the rear folder). Also, by switching to an aqueous solution, you may reduce your hazardous waste reporting requirements (see the factsheet *Your Generator Status)*.

Health Benefits

Alternative cleaning methods can improve the health of your workers. Numerous studies have shown unsuspected health consequences of solvent exposure. Exposure to solvents and inhalation of their vapors can lead to cancer, nervous system damage, respiratory ailments, or skin disorders. In fact, a number of lawsuits have been filed successfully because of harm from solvents.

Cost Benefits

By switching to an aqueous method, your shop will save costs by reducing cleaning labor, waste disposal costs, servicing and chemical purchasing, in addition to legal liability. In U.S. EPA test case studies, the payback period varied from three months to one year. Refer to the *Parts Washing Cost Worksheet* in this section to estimate your shop's payback period.

Financial Assistance

Will you need help with the initial equipment costs? The Maryland Department of the Environment has a small business pollution compliance loan program available to help finance air pollution control for small businesses. Businesses with 25 or fewer full-time employees are eligible to apply for a loan for the upgrade or replacement costs of air pollution control equipment, or equipment required to make operational changes to reduce air pollution. For further information regarding this program contact the Maryland Department of Environment Small Business Assistance Program at 410.537.4158.

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[1]Based on annual emissions and fuel consumption from an "average" passenger car; factors used derived from standard EPA emission models.

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Just the Facts About ...

Parts Washing Vendors

Vehicle Maintenance and Repair Series

A number of companies around the United States manufacture solvent-free parts washers to suit a variety of vehicle parts degreasing applications. Provided below is a list of some of the companies with which the Montgomery County Department of Environmental Protection is familiar. Other vendors may provide similar or identical products and services. Montgomery County Department of Environmental Protection does not convey and should not be interpreted as conveying approval, endorsement, or recommendation for any of these firms or their respective products.

Vendor List for Aqueous Units

Alpha Cleaning Systems
805.520.8057
800.729.2828

Automotive Service Equipment
800.229.6218

Better Engineering Mfg., Inc.
8361 Town Center Court
Baltimore, MD 21236-4964
800.229.3380

Bioforce
701 N. 7th St.
Minneapolis, MN 55411
612.321.0922

Chappell Supply
412 N. Rockwell
Oklahoma City, OK 73127
800.525.4970

ChemFree Corporation
8 Meca Way
Norcross, GA 30093
770.564.5580

Equipment Manufacturing Corporation
14930 Marquardt Ave.
Sante Fe Springs, CA 90670
888.833.9000

EcoClean Corporation
510.797.4050

Environmental Services Group
P.O. Box 1302
Englewood Cliffs, NJ 07632
201.569.2020
800.877.2436

For Best Cleaning Solutions, Inc.
225.334.6990

Global Sonics
800.437.7117

Graymills Corporation
773.248.6825

Hydro-Blast Inc.
6917 N.E. 39th Court
Vancouver, WA 98661
800.332.1590

KleenTec
800.435.5336

Landa Inc.
4275 NW Pacific Rim
Camas, WA 98607
800.547.8672

Mirachem
602.966.3030
800.847.3527

The Hotsy Corporation
21 E. Inverness Way East
Englewood, CO 80112
800.525.1976

Safety-Kleen
800.323.5040

Wilson Environmental, Inc.
800.469.0799

Just the Facts About ...

Parts Washing Cost Worksheet

Vehicle and Maintenance Repair Series

Complete this worksheet to calculate the costs of replacing solvent cleaning units with one or more types of aqueous units.

Start here by determining your current costs for solvent cleaning.

	Solvent cleaning (leased units with servicing)	Your Facility
A	Number of units leased	
B	Current cost per service visit per unit	
C	Number of times unit serviced per year	
D	Total annual solvent service cost (AxBxC)	
E	Loaded hourly labor rate of shop worker	
F	Total number of cleaning labor hours per week	
G	Total labor costs (ExFx52)	
H	Total annual cost for solvent cleaning (D+G)	

If you want to implement one or more microbial sink-top units, continue below. If not, skip to the next section.

	Conversion to aqueous microbial sink-top cleaning (units purchased)	Your Facility
I	Number of microbial sink-top units to be purchased	
J	Purchase price plus installation costs per unit	
K	Total capital cost of sink-top units (IxJ)	
L	Cost per gallon of aqueous cleaner	
M	Estimated aqueous cleaner use per unit year in gallons	
N	Aqueous cleaner purchase cost per unit per year (LxM)	
O	Cost per replacement filter	
P	Number of replacement filters per unit per year	
Q	Total cost for replacement filters per unit (OxP)	
R	Total number of cleaning labor hours per week	
S	Total annual labor cost (ExRx52)	
T	Total sink-top unit operation and maintenance	

If you want to implement one or more aqueous spray cabinets, continue below. If not, skip to the next table.

	Conversion to Spray Cabinet Cleaning (units purchased)	Your Facility
U	Number of spray cabinets to be purchased	
V	Purchase price plus installation cost per spray cabinet	
W	Total capital cost of spray cabinets = UxV	
X	Cost per gallon of aqueous cleaner	
Y	Extimated aqueous cleaner use per unit per year in gallons	
Z	Aqueous cleaner purchase cost per unit per year = XxY	
AA	Disposal cost per gallon of spent solution (including sludge)	
BB	Gallons of solution per spray cabinet	
CC	Number of solution changes per unit per year	
DD	Total cost for spent solution disposal per unit = AAxBBxCC	
EE	Number of cleaning labor hours per week (typically reduced up to 80%)	
FF	Total annual labor cost = ExEEx52	
GG	Total spray cabinet O&M cost = [(Z+DD)xU]+FF	

Summarize your calculations below to determine your potential cost savings and payback period.

	Results	Your Facility
HH	Total annual capital cost of all units purchased (K+W)	
II	Total annual cost savings (including labor costs) (H-T-GG)	
JJ	Payback period (year) (HH/II)	

The table below compares the cost of using an aqueous microbial sink-top unit and a spray cabinet to solvent units. These costs are based on actual demonstration results at two fleet maintenance facilities.

SOLVENT UNIT VS. MICROBIAL SINK-TOP UNIT

One Solvent Unit		One Microbial Sink-top Unit	
	Annual costs		Annual costs
Leasing, waste Management	$1,908	Purchase price[1]	$266
		Chemicals	$365
Electricity(est.)	$120	Filters	$60
		Electricity(est.)	$360
Cleaning labor (239 hrs)	$11,950	Solution disposal[2]	$125
		Cleaning labor (239 hrs)	$11,950
Total Costs	**$13,978**	**Total Costs**	**$13,126**

Annual Savings: $852

TWO SOLVENT UNITS VS ONE SPRAY CABINET

Two Solvent Units		One Spray Cabinet	
	Annual costs		Annual costs
Leasing, waste management	$3,816	Purchase price[1]	$776
		Chemicals	$510
Electricity(est.)	$369	Solution and sludge disposal[3]	$3,672
Cleaning labor (738 hrs)	$36,900	Electricity(est.)	$3,100
		Cleaning Labor (221 hrs)	$11,050
Total Costs	**$41,085**	**Total Costs**	**$19,108**

Annual Savings: $21,977

[1]Annualized over a 7 year period a 10 percent interest
[2]Assumes off-site disposal of 25 gallons of waste solution once per year
[3]Assumes off-site disposal of 64 gallons of waste solution 6 times per year

This sheet was developed by the Environmental Protection Agency(EPA) Region 9 pollution prevention program.

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Just the Facts About ...

Aerosol Cans

Vehicle Maintenance and Repair Series

Eliminate Aerosol Cans

What's wrong with aerosol cans? When compared to refillable spray bottles, they are expensive and have greater environmental consequences.

Did you know?

- Ounce for ounce, spray on product sold in aerosol cans is about twice the cost of bulk product.
- You pay for propellants in every aerosol can (10 to 15 percent by weight).
- Carbon dioxide, propane and butane are commonly used aerosol propellants that are also "greenhouse gases" that contribute to global warming and smog formation.
- Aerosol cans of solvent-based brake cleaners contain volatile organic compounds (VOCs) that contribute to ozone and smog formation and harm worker's health.
- Used aerosol cans that are not empty may be considered hazardous waste. Under the federal Resource Consrvation and Recovery Act (RCRA), aerosol cans may only be recycled or disposed of as non-hazardous wastes if they have been emptied through normal use or punctured and drained to remove significant liquids. (Shops are responsible for properly managing any captured wastes recovered from puncturing and draining.)

Effective Alternatives

Effective alternatives to aerosol cans are readily available. Using the alternatives outlined in this factsheet can reduce your product costs, regulatory requirements, and eliminate or reduce your worker's exposure to harmful vapors. Some of the alternatives to aerosol cans include refillable spray bottles and aqueous brake washers. For example, aqueous brake washers may be substituted for cans of solvent-based aerosol brake cleaners.

Refillable Spray Bottles

There are two basic types of refillable spray bottles: metal bottles that spray product using compressed air and plastic bottles that use a hand pump to spray product.

Metal Bottles

Metal bottles are filled with product (for example brake cleaner or carburetor cleaner) from a bulk container and are pressurized with air at 80 to 200 pounds per square inch using a compressed-air hose.

Plastic Bottles

Plastic bottles are also filled from bulk containers but do not require compressed air. Instead, they are operated by pumping a trigger to create a mist or stream of product.

Aqueous Brake Washing

Washing brakes before inspection and repair helps create a clean work area. It also removes dust and debris that prevent brakes from functioning properly and cause squeaking and grinding. Brake washing can be performed using three devices: aerosol cans of solvent-based brake cleaner; solvent brake washing units; or aqueous brake washing units. The best environmental practice is to use aqueous brake washing units which eliminates the use of both aerosol cans and solvents. In fact, many aqueous parts washing units can also perform brake washing (check with individual vendors). Remember, if your shop uses cans of solvents or other hazardous materials, your shop must obtain a Hazardous Materials Use Certificate from Montgomery County Local Emergency Planning Council (LEPC). So take the additional added step of using a non-hazardous substance where practical to save on your regulatory requirements. See the LEPC folder in the rear of this manual for details.

Aqueous brake washing solutions contain compounds that are either non-hazardous or considerably less hazardous than solvents. With proper filtration and regular addition of fresh solution, many shops can go for years without requiring solution disposal. Over time contaminants build up creating sludge and making the solution less effective. Waste solution, sludge, and filters may contain metals washed off the brake assembly, or solvents that dripped into the sink and contaminated the solution. Waste solution, sludge and filters should be shipped off-site as either hazardous or non-hazardous wastes. Test the waste stream at least once to make this determination, and dispose of the waste solution and filters accordingly.

Warning

If you use aerosol brake cleaners to spot clean or dry brakes after aqueous brake washing, be aware that many aerosol products contain F-listed chemicals. An F-listed chemical is a chemical that makes each waste it contaminates a hazardous waste, no matter what its concentration in the waste is. Even one drop of an F-listed aerosol solvent that drips into your brake washing solution is enough to make it regulated hazardous waste. To save time and avoid potential regulatory problems altogether, use compressed air to dry brakes rather than an aerosol brake cleaner.

Case Studies

Case studies performed by the Environmental Protection Agency showed that auto shops pay back periods range from immediate to five months. After the payback period, one auto shop reported reducing aerosol product costs by 84%!

Environmental Paybacks

By substituting aerosol cans with refillable spray bottles, you are helping to protect the environment by eliminating the solid waste stream they produce. And by taking the added step of utilizing aqueous brake washing units, you are significantly reducing volatile organic compounds (VOCs) which contribute to smog formation.

Health Benefits

The elimination or reduction of solvent exposure by switching to an aqueous brake cleaner has added health benefits. Numerous studies have shown unsuspected health consequences of solvent exposure. Exposure to solvent and inhalation of their vapors can lead to cancer, nervous system damage, respiratory ailments, or skin disorders. In fact, a number of lawsuits have been filed successfully because of harm from solvents.

Cost Benefits

By switching to refillable spray bottles, your shop saves money by avoiding the high cost of aerosol cans. Added cost benefits by utilizing aqueous brake washers include savings on waste disposal costs (over solvent washing units), chemical purchasing, in addition to potential and substantial liability costs. Refer to the *Refillable Spray Bottle Worksheet* in this section to determine your payback period and cost savings.

Financial Assistance

Help is available for the initial equipment costs. The Maryland Department of the Environment has a small business pollution compliance loan program available to help finance air pollution control for small businesses. Businesses with 25 or fewer full-time employees are eligible to apply for a loan for the upgrade or replacement costs of air pollution control equipment, or equipment required to make operational changes to reduce air pollution. For further information regarding this program contact the Maryland Department of the Environment Small Business Assistance Program at 410.537.4158.

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Just the Facts About ...

Vendor List for Refillable Spray Bottles and Aqueous Brake Washers

Vehicle Maintenance and Repair Series

A number of companies around the United States manufacture refillable spray bottles and aqueous brake washers. Provided below is a list of some of the companies with which the Montgomery County Department of Environmental Protection is familiar. Other vendors may provide similar or identical products and services. The Department of Environmental Protection does not convey and should not be interpreted as conveying approval, endorsement, or recommendation for any of these firms or their respective products.

Hand-pumped Spray Bottles:

McMaster-Carr
732.329.3200

Impact Products
419.841.2891

Tolco Corporation
419.241.1113

Bulk Product:

Zep Mfg. Company
408.739.3656

MOC Products Co. Inc.
818.896.2258

Tiodize Co. Inc.
714.898.4377

CRC Industries Inc.
800.272.8963

Berryman Products Inc.
817.640.2376

Gold Eagle Co.
773.376.4400

Kents Automotive
800.654.6333

Aqueous Brake Washers:

Clayton Associates
800.248.8650

Kleer-Flo
800.328.7942

Mirachem
800.847.3527

Raybestos
800.407.9263

Safety-Kleen
800.323.5040

Kleen Tec
800.435.5336

Safe CleanUp Solutions
888.848.0879

St. Thomas Mfg., Ltd.
540.631.7544

Air-pressurized Spray Bottles:

Milwaukee Sprayer Mfg. Co. Inc.
800.558.7035

Kents Automotive
800.654.6333

Just the Facts About ...

Refillable Spray Bottle Worksheet

Vehicle Maintenance and Repair Series

Complete this worksheet to calculate the costs and potential savings of replacing aerosol spray cans with refillable spray bottles. The worksheet does not include the technician time to refill spray bottles because it is usually comparable to the time required to throw away an aerosol can and obtain a new one. This worksheet should be completed for each type of aerosol can product that might be replaced by refillable spray bottles.

	Aerosol Can Use	Your Facility
A	Number of aerosol cans used annually	
B	Fluid ounces per aerosol can	
C	Cost per aerosol can	
D	Gallons of liquid aerosol used annually [(AxB)128 ounces per gallon]	
E	Annual aerosol can disposal cost	
F	Total annual aerosol can cost [(AxC)+E]	

	Spray Bottle Use	Your Facility
G	Number of refillable spray bottles needed (assume one per mechanic)	
H	Unit capital cost for spray bottles and accessories	
I	Bulk product purchase cost per gallon	
J	Total annual bulk product purchase cost (DxI)	

	Results of Spray Bottle Use	Your Facility
K	Capital Cost (GxH)	
L	Annual savings (F-J)	
M	Payback period (years) (K) (L)	

Note: Information in this fact sheet was developed by the U.S. Environmental Protection Agency Region 9 pollution prevention program.

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Refrigerants

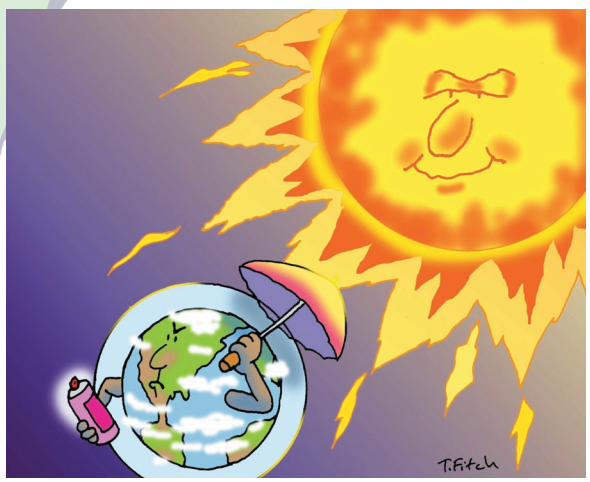
Vehicle Maintenance and Repair Series

What's Wrong With Used Refrigerants?

Refrigerants containing chlorofluorocarbons (CFCs), such as CFC-12, are suspected of contributing to the depletion of the stratospheric ozone layer. The ozone layer acts as a blanket in the stratosphere that protects us from harmful ultraviolet (UV) radiation from the sun. Scientists worldwide believe that man-made chemicals such as CFC-12 (also known by the trade name Freon) are rapidly destroying this layer of gas 10 to 30 miles above the earth's surface. Strong UV radiation breaks the CFC- 12 molecules apart, releasing chlorine. A single chlorine atom can destroy over one hundred thousand ozone molecules. Ozone loss in the atmosphere is likely to lead to an increase in cataracts and skin cancer, which is now one of the fastest growing forms of cancer, and could weaken the immune system. In the U.S., one person dies of skin cancer every hour.

CFCs and the Clean Air Act

The 1990 Clean Air Act Amendments banned the production of most ozone depleting substances including CFCs by the end of 1995. Sections 608 and 609 of the Clean Air Act prohibit the release of refrigerants during servicing and requires recycling of refrigerants, either on-site or off-site. This means vehicle maintenance and repair shops must use refrigerant recycling equipment to work on vehicle air conditioners. Further, EPA regulations require that if you deal with air conditioners, you must be certified, and use EPA approved CFC recovery and recycling equipment. (See the accompanying factsheet *EPA Approved Technician Certification Programs* and the factsheet *EPA Approved Equipment*.) There are a number of viable substitutes for CFC refrigerants. Before switching over to an alternative refrigerant, make sure it is an EPA-approved refrigerant and has been approved by the vehicle or air conditioning manufacturer. (See the factsheet *EPA Approved Refrigerants*)



Alternative Refrigerants

There are a number of viable substitutes for CFC-12 refrigerants, such as HFC-134a, a hydrofluorocarbon, on the market today. Note that other than HFC-134a, all EPA-accepted refrigerant substitutes are blends that contain ozone-depleting hydrochlorofluorocarbons (HCFC), such as R-22, R-142b and R-124. Review the Material Safety Data Sheet (MSDS) of the alternative in which you are interested and avoid it if it contains CFCs or HCFC.

Help protect the environment:

- Service motor vehicle air conditioners appropriately.
- Use a less hazardous alternative.

Ventilation of All Refrigerants Prohibited

Section 608 of the Clean Air Act prohibits the venting of any of these alternatives, including HFC-134a, into the atmosphere. The prohibition on venting these ozone-depleting blends has been in effect since 1992.

Recycling of HFC-134a Required

Effective in 1998, the EPA passed a rule requiring recycling of HFC-134a. Technicians who repair or service HFC-134a must recover the refrigerant and either recycle it on-site or send it off-site to a reclamation facility so that it may be purified.

EPA-Approved Equipment Required for All Refrigerants

The technician must use EPA- approved equipment to perform the refrigerant recovery and recycling. Such equipment

cleans the refrigerant so that oil, air and moisture contaminants reach acceptably low levels. As of 1998, EPA allows recycling of refrigerant blends used in motor vehicle air conditioning systems, provided that: recycling equipment meets a new Underwriters Laboratories (UL) standards; and refrigerant is returned to the vehicle from which it was removed.

Training for Technicians Required for All Refrigerants

Technicians who repair or service HFC-134a or any of the refrigerant blends must be trained and certified by an EPA-approved organization. If a technician is already trained and certified to handle CFC-12, he does not need to be recertified.

Record Keeping Required for All Refrigerants

Service shops must certify to EPA that they own approved CFC-12, HFC-134a equipment or own approved equipment designed to service refrigerant blends. Note that this certification is a one-time requirement. If a shop purchased a piece of CFC-12 recycling equipment in the past and sent the certification to EPA, the shop does not need to send a second certification to EPA when it purchases a second piece of equipment, no matter what refrigerant that equipment is designed to handle. If the refrigerant is recovered and sent to a reclamation facility, the shop must retain the name and address of that reclaimer.

Remember:

- Use U.S. EPA - approved refrigerant reclaiming units.
- Technicians repairing or servicing air conditioning systems must be trained and certified by an EPA-approved organization to use approved equipment.
- Check for and repair leaks in air conditioning systems prior to recharging.
- Recover the used refrigerant and recycle it on-site or ship it to an off-site reclamation facility.

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Just the Facts About ...

EPA Approved Refrigerants

Vehicle Maintenance and Repair Series

CFC-12 (also known by the trade name Freon, was widely used in air conditioners for automobiles and trucks for over 30 years. While new vehicles no longer use CFC-12, most vehicles built before 1994 still require its use for servicing. In 1994, EPA established the Significant New Alternatives Policy (SNAP) Program to review alternatives to ozone-depleting substances like CFC-12. Under the authority of the Clean Air Act (CAA), EPA examines new substitutes for their ozone-depleting, global warming, flammability, and toxicity characteristics. EPA has determined that several refrigerants are acceptable for use as CFC-12 replacements in motor vehicle air conditioning systems, subject to certain use conditions. For more details regarding the use conditions, more specifics about refrigerant alternatives, or updates, please contact EPA's hotline at 800.296.1996 or their website at http://www.epa.gov/title6/snap/macssubs.html.

A few details regarding the "Approved Refrigerant Chart" found on the back of this factsheet:

"acceptable subject to use conditions" is cited when EPA believes such refrigerants, when used in accordance with the conditions, are safer for human health and the environment than CFC-12. This designation does not mean that the refrigerant will work in any specific system, nor does it mean that the refrigerant is perfectly safe regardless of how it is used. Finally, note that neither EPA or the Montgomery County Department of Environmental Protection approves or endorses any one refrigerant that is acceptable subject to use conditions over others also in that category. Also, note that EPA does not test refrigerants.

Use Conditions:
Under the SNAP Rule, each new refrigerant must be used in accordance with the conditions listed below.

- Unique Fittings: Each new refrigerant must be used with a unique set of fittings to prevent the accidental mixing of different refrigerants. These fittings are attachment points on the car itself, on all recovery and recycling equipment, on can taps and other charging equipment, and on all refrigerant containers.
- Labels: Whether a car is originally designed to use a new refrigerant or is retrofitted, the technician must apply a detailed label giving specific information about the alternative. The label's background color is chosen by the manufacturer to be unique.
- Remove Original Refrigerant: The original CFC-12 must be removed from the system prior to charging with the new refrigerant. This procedure will prevent the contamination of one refrigerant with another. Refrigerants mixed within a system probably won't work and could damage the system. This requirement means that no alternative can be used as a "drop-in".
- Barrier Hoses: HCFC-22, a component in some blends, can seep out through traditional hoses.
- Compressor Shutoff Switch: Some systems have a device that automatically releases refrigerant to the atmosphere to prevent extremely high pressures. When retrofitting any system with such a device to use a new refrigerant, the technician must also install a high-pressure shutoff switch.

Name[1]	Status[2]	Date	Manufacturer	Components/Reason Unacceptable						
				HFC-22	HCFC-124	HCFC-124b	HCFC-134a	Butane (R-600)[3]	Isobutane (R-600a)[3]	HFC-227a
HFC-134a	ASU	3/18/94	Several				100			
FRIGC FR-12	ASU	6/13/95	Intermagnetics General 800.555.1442		39		59	2		
Free Zone/RB-276[4]	ASU	5/22/96	Refrigerant Management Services of Georgia 800.347.5872			19	79			
R-406A/GHG[5]	ASU	10/16/96	People's Welding 800.382.9006	55		41			4	
GHG-X4/Autofrost/ Chill-It[5]	ASU	10/16/96	People's Welding 800.382.9006	51	28.5	16.5			4	
Hot Shot/Kar Kool[5]	ASU	10/16/96	ICOR 800.357.4062	50	39	9.5			1.5	
Freeze 12	ASU	10/16/96	Technical Chemical 800.527.0885			20	80			
GHG-X5[5]	ASU	6/3/97	People's Welding 800.382.9006	41		15			4	40
GHG-HP[5]	ASU	10/16/96	People's Welding 800.382.9006	65		31			4	
Ikon-12	ASU	5/22/96	Ikon Corp. 601.868.0755	Composition claimed as confidential business information						
OZ-12	UNA	3/18/94	OZ Technology	Flammable blend of hydrocarbons; insufficient data to demonstrate safety						
R-176	UNA	3/18/94	Arctic Chill	Contains CFC-12, which is inappropirate in a CFC-12 substitute						
HC-12a	UNA	6/13/95	OZ Technology	Flammable blend of hydrocarbons; insufficient data to demonstrate safety						
Durocool 12a	UNA	6/13/95	Duracool Limited	This blend is identical to HC-12a in composition but is manufactured by a different company						
R-405A	UNA	6/13/95	Greencool	Contains a perfluorocarbon, which has extremely high global warming potential						

Notes:

[1] R-401A (made by DuPont), R-401B (DuPont), R-409 A (Elf Atochem), Care30 (Calor Gas), Adak-29/Adak-12 (TACIP Int'l), MT-31 (Millenia Tech), and ES-12R (Intervest) have not been submitted for review and therefore it is illegal to use these refrigerants in such systems.

[2] Contact EPA for details on legality of use according to status. ASU = acceptable subject to fittings, labeling, no drop-in, and compressor shutoff switch ("Use Conditions"). UNA = unacceptable; illegal for use as a CFC-12 substitute.

[3] Although some blends contain hydrocarbons, all blends that are ASU are nonflamable as blended.

[4] Freezone contains 2 percent of a lubricant.

[5] HCFC-22 content results in an additional use condition: must be used with barrier hoses.

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Just the Facts About ...

EPA Approved Equipment

Vehicle Maintenance and Repair Series

Under Section 609 of the Clean Air Act, EPA reviews refrigerant handling equipment to ensure that it meets published standards. For updates, questions, or more information, contact the EPA at 800.296.1996.

This equipment falls into two categories:

1. Equipment that can both recover and recycle refrigerant and
2. Equipment that can recover refrigerant but not recycle it.

Within each category, equipment that is "substantially identical" to approved equipment may be used as if it were actually approved.

Table I. CFC-12 Recover/Recycle Equipment

Manufacturer	Model	Remarks
A. Gramkow	RRC	No longer manufactured
AES NTRON	Retriever 2.2AC and 2.2A	
Airosol Company	Chargette RC2000, RC2200	No longer manufactured
American Thermaflo	18000	Dual Refrigerant
Applied Ecological Systems	2.2c	
Assemblies Systems Corp.	NS-2000	No longer manufactured
Atlas Supply Company	EAC-205, -25, -750, -1400, -1500	Multiple Listings
Atlas/SPX-Robinair	EAC-125, -37-, 679125, 679137	
Automotive Diagnostics, Div. Of SPX	40-375	Multiple Listings
Bear/SPX-Robinair	40-310, 17352C/17352, 17355C, 40-327, 40-370	
Belco Controls, Inc.	08	No longer manufactured
Carquest Corporation	209990	Multiple Listings
Carrier	12RA001100	No longer manufactured
Catepillar Inc./SPX-Robinair	4C8754, 4C8755, 905786, 905787, 905788, 905789, 055790	
Century Mfg. Co.	MR-1991-A, -R, ME-1991-A, 160-002, -003, -004, -005, -013, -014, -015,.-016. Solar 5090, -5100, -5110, 7100, 8100, 85100, 86100	
Chrysler/SPX-Robinair	OT-17350, OT-17400, OT-17700	
Classic Tool Design, Inc.	FBR-11	No longer manufactured
Cornwell/SPX-Robinair	RA-17350C, RA-17400, RA-17500B, RA-17700	

Diavia/SPX-Robinair	17705	
D.W. Meyers Enterprises, Inc.	AM6000, MR-1991-A, MR-1991-R, ME-1991-A	No longer manufactured
Dowmar Solvent Recovery Systems, Inc.	DR12R	No longer manufactured
Draf Industries	1400	No longer manufactured
Enspeco, Inc.	RMS-3112, RMS-3012	
Environmental Products Amalgamated Pty. Ltd.	SKYE.EP3, SKYE.EP-4/5, EP-9S	
Environmental Systems Products, Inc.	FICS 9000	Multiple Listings
Environmental Technologies Corporation	SYSTEM I 102-12	
Everco/SPX-Robinair	A9990	
Everco Industries, Inc.	A9950	No longer manufactured
Firestone/SPX-Robinair	TE 48-30-960-7	
FT Industries (formerly Fluoro Tech, Inc.)	Fluoromizer 3000R (FM3000R), FM3000 with RM3 module (Fluoromizer, 3000), FM 4000-12	Certified by ETL, Inc. Multiple Listings
Ford Motor Company	158-00001, -00002, 01400900, 02300100	Multiple Listings
Ford-New Holland/SPX-Robinair	FNH00140, FNH00141, FNH00335	
Four Seasons	59870	Multiple Listings
Four Seasons	59900,59901	
General Motors/SPX-Robinair	17250B	
Honda/SPX-Robinair	J-3810-CH	
IG-LO, Inc.; Subsidiary of Valvoline, Inc.	1400, 1500	No longer manufactured
IG-LO, Inc; Subsidary of Valvoline, Inc.	1000	No longer manufactured
Infiniti/SPX4-Robinair	J-38100-INF	
International Carbonics Inc. (now The Youngstown Research and Development Company YRD)	RRR-SS, BH-RRR, RRR-SSA	No longer manufactured
James Kamm Technologies	K-33333, K3333-TB, AC-3333	

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Table I. CFC-12 Recover/Recycle Equipment (cont.)

John Deere/SPX-Robinair	JTO 2020, JTO 2021, JTO 2052	
Kent Moore/SPX-Robinair	J-38100-C, J-38100-B, J-38750, J-38550-B, J-39770, 42-17400, 43-40015-HDE, 43-40018-HDE, 42-175250-C, 43-40017-HDE, 42-17350-C, 43-40014-HDE, J-38100-D	
Kolpak Mfg. Co.	ZRM2000	
Lexus/SPX-Robinair	00002-01396-02	
MAC Tools, Inc.	ACRRC-750, AC650, AC751, AC760, AC600, AC700, AC800,AC750, AC761, AC790	Multiple Listings Mulltiple Listing by ETL, Inc.
MAC Tools, Inc./SPX-Robinair	AC17350C, AC17400, AC17500, AC17700, AM6000	
Matco Tools Corp.	ACRM120, ACRM3412	Multiple Listings
MATCO Tools/SPX-Robinair	AC17350, AC17400, AC17500B, AC17700	
Mastercool, U.S.A. Inc.	Supervamp 62000, 65000, 65500	
Mazada/SPX-Robinair	17401MAZ	
MDI	1/2HPCA	
Mitsubishi/SPX-Robinair	17400MIT, 17401MIT	
Moog Automotive, Inc.	209990	Multiple Listings
Murray Corporation	ATC-1000, -1100, -5000	No longer manufactured
Myers Enterprises	MR-1991-A, MR-1991-R, ME-1991-A	
NAPA	209990	Multiple Listings
NAPA Temp. Products	ATC1100, -5000	Multiple Listings
Nissan/SPX-Robinair	J-38100-NI, 17400NIS, 42-17250-NI, 17401NIX, 17403NIS	
OTC/SPX-Robinair	OEM-1380, -1396, -1412, -1420, -48158, 48463	
Ozone Environmental Industries, Inc.	R-6A, OS-1000, OS-4000, OS-2000	No longer manufactured
P & F Technologies	PF-8, Viper	
Power Manufacturing	R-12a	
Promax Industries	Roger-1 (front and back), Roger 1B	Consists of front and bach systems
R & D Fountain Industries	AM6000	No longer manufactured
Refrigerant Recovery Systems, Inc.	ST100A	
Refrigerant Recovery Technologies, Inc.	Fluoromizer 3000R (FM3000R), FM3000 with RM3 module (Fluoromizer, 3000), FM 4000-12	Certified by ETL, Inc.

Table I CFC-12 Recover/Recycle Equipment (cont.)

RTI Technologies, Inc. (formerly Refrigerant Technologies, Inc.)	RRC-1000, RRC-750, RRC-750X, RRC-751, TC-700, TX-600, AC-800, TX-200, RRC770, TC2700, AC790, TC670, RRC760, RRC761	Certified by ETL, Inc.
Refrigeration Transfer Systems/Justice Supply and Glass	RFT-2212, RFT-2234	
Rolo, Inc.	91R12	
Rotunda/Ford (Sun & SPX)	158-00001, 158-00002, 014-009000, 023-00100, 078-00802, 078-00800, 078-00801	
R.S.I.	Port-O-Zone, Automotive	
Saturn/SPX-Robinair	42-A7250, 17400ASAT	
Snap-On Tools Company	ACT2500, AC3000, ACT3300, ACTR3000, ACTH3400	Multiple Listings
Source World Wide Inc.	R12a	
Sun Electric Corporation	MRC-150, -300, -312, -334, -400, -500, MTC-4000, NAPA 1100, -5000, A9950, ATC-1000, -1100, -5000, -78-00800, -00801, -00802, -00805, ACT-3120, -334-, -4100, Kool Kare EEAC101A-301A	
Technical Chemical Company	SERCON-8000 (-M, -A, -MA, -MAH, -MV, -MAV, -H), -9000 (-M, -A, -MA, -MV, -MAH, -MAV, -H) -9220, -9220M. -5000H with -SR4000 or 4000A filter unit, -5000A, -5000AB, -5000MD or -5000MBJ with SR4000, 4000A or -4000H filter unit	
Toyota/SPX-Robinair	TOY--01380, TOY-01396, 00002-01396-01, 42-17400, 17400TOYJ, 17401TOYJ, 17404TOYJ	
Trane Division of American Standard	RRPC	Multiple listing
Van Steenburgh Engineering Lab, Inc.	JV90-4, -3, -2, -1, LV30-4, -3, -2, -1, CV15-4, -3, -2, -1	
Watsco Components, Inc.	WC-2	Multiple listing
White Industries; Division of K-Whit Tools	01050, 01060, 01061, 01080, 01095, 1095XL, 01075, 1075XL, 01234a, 01234av, 1234XL	
Wynn's Climate Systems	90-001A, -0458A, -1100A, -1300A, -1500A	
The Youngstown Research and Development Company YRD (Formerly Internation Carbonics)	RRR-SS, BH-RRR	

Table 2. Substantially Identical CFC-12 Recover/Recycle Equipment

Manufacturer	Model
AES-Ntron	Models 2.2 and 2.4
Everco Industries	Everco A9989 (with Robinair retrofit kits 17217 and 17216)
James Kamm Technologies	Model K-3330

Table 2. Substantially Identical CFC-12 Recover/Recycle Equipment (cont.)

Justice Glass and Supply Company	R-12 Recover-Recycle Machine
K-Whit Tools, Inc.	White Industries Model 01050
LSK, Inc	CFC-SAV-R (with Robinair retrofit kit 17217)
Murray/Division of Moog Automotive, Inc.	NAPA Temp ATC-1000
Refrigerant Recovery Systems, Inc.	REJUVENATOR ST-100 AND ST-1000
Robinair Division, SPX Corporation	Robinair 17200 (with retrofit kits 17216 and 17217), 17500, RTB17200, RTB 17500
Space Age Air Products, Inc.	Model 1010 (with retrofit kit Robinair 17217

Table 3. CFC-12 Recover Only Equipment

Manufacturer	Model	Remarks
AES NTRON	R1.1AC	
Assemblies Systems Corp.	NS750A	No longer manufactured
CFC Equipment, Inc.	EM2020A	Certified by ETL, Inc.
Clardy Manufacturing Co.	CP4MA	
C Mar Industries Inc.	CM20-12A	No longer manufactured
DAVECO Recovery Division of DAVECO Industries Inc.	41250, 41250-2	
Econozone, Inc. (RSB Engineering) (now Refrigerant Management Systems	Econozone 29A	No longer manufactured
Environmental Products Amalgamated PTY Ltd.	EP10A	
FT Industries (formerly Fluoro Tech, Inc.)	FM3000	Certified by ETL, Inc.
MDI	5150D	
National Refrigeration Products, Inc.	ULV63	
Power Manufacturing, Inc.	012B-FRSPORT-01 (Power R1)	
Promax Amprobe Industries	RG5000A	
Refrigerant Management Systems Inc. (formerly Econozone, Inc.)	Econozone 29A	
Refrigerant Recovery Systems, Inc.	RC-1-A	
Refrigerant Recovery Technologies, Inc.	FM3000, FM4000-12	Certified by ETL, Inc.
RTI Technologies, Inc. (formerly Refrigerant Technologies, Inc.)	TX200	Certified by ETL, Inc.
R.S.I.	Mini-Sucker1 Automotive Recovery System, RSI Part Number 600075	
SPX Corporation, Robinair Division	17625A	
Technical Chemical	SR5000MBJ, SR1000MBJ	
Watsco Components	WC1S-A	
White Industries Div. of K-Whit Tools Inc.	01055	

Table 4. Dual Refrigerant Recover/Recycle Equipment that Uses Common Circuitry

Manufacturer	Model	Remarks
Mac Tools, Inc.	AC800	Certified by ETL
Penguin Refrigeration	1100	Certified by ETL
Robinair Division of SPX Corp.	12134A, 12135A, 17800A	Meets SAE J1770
RTI Technologies	AC790, AC800, TC2700	Certified by ETL

Table 5. HFC-134a Recover/Recycle Equipment Approved by UL or ETL

Manufacturer	Model	Remarks
Automotive Diagnostics Division of SPX Corp.	40-380, 02300150	
Century Mfg. Co.	5150/134a, 160-001, -008, -009, -010, -011, -012, 600-134a, 7134, 8134, 85134, 86134,	
Enspeco Inc.	RMS-3134, RMS-3034	
Environmental Technologies Corp.	System I 102-34	
Four Seasons	59902	
IG-LO, Inc. subsidiary of Valvoline	2500	No longer manufactured
James Kamm Technologies	K-3334	
Mac Tools, Inc.	AC610, AC710, AC750, AC760, AC761, AC790	Certified by ETL, Inc.
Mastercool USA Inc.	Supervamp 64000, 67000, 67500	
Matco Tools Corp.	ACRM134, ACRM3412	
Ozone Environmental Industries	OS-4134	No longer manufactured
P&F Technologies Ltd.	PF134, Viper, Compact-134	
Power Manufacturing	R134a	
Refrigerant Recovery Systems, Inc.	ST134a	
Refrigerant Recovery Technologies, Inc.	FM4000-134	Certified by ETL, Inc.
Robinair Div. Of SPX	12134A, 12135A, 13670, 13671, 17534, -GM, -INF, -KM, - MEX, -NI, 17734, 17454, 17455, 17800A, AC34145, 34400, 34600, 34666, 34700, -701, -702, -703, 34725, 34790	
RTI Technologies, Inc.	TX600-R134a, TC700-R134a, RRC770-R134a, TC2700, AC790-R134a, TC670-134a, RRC-760, RRC-761, RRC-750	Certified by ETL, Inc.
RTS	RFT2234	
SKYE USA (Environmental Products Amalgamated Pty. Ltd.)	EP-3N	

Source World Wide Inc.	R134a	
Sun Electric Corp.	MRC-334, -450, MTC-4500, MRC-334, -450, MTC-4500, ACT-334, -4500, 078-00850, Koll Kare EEAC104A, -304A	
Technical Chemical Co.	SR8134M, SR8134MV, SR9134M, SR9134, SR5134 with SR 4134	
White Industries Division of K-Whit Tools, Inc.	1070XL, 01085, 01090, 1090XL, 01234a, 01234av, 1234XL	
Wynn's Climate Systems Inc.	90-1200A, -1400A, -1500A	

Table 6. HFC-134a Recover-Only Equipment Approved by UL or ETL

Manufacturer	Model
Skye USA (Environmental Products Amalgamated PTY Ltd.	EP10N
Promax Amprobe Industries	RG5000AR-134a

Just the Facts About ...
EPA Approved Technician Certification Programs

Vehicle Maintenance and Repair Series

Section 609 of the Clean Air Act requires technicians that work on vehicle air conditioners to become certified by an EPA approved program.
Note: * indicates that the program offers home study
** indicates that the program offers training and testing on the World Wide Web.

*Air Conditioning Contractors of America/
Ferris State University
http://www.acca.org/
1712 New Hampshire Ave, NW
Washington, D.C. 20009
202.483.9370

*ASE (National Institute fo Automotive Service Excellence)
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800.726.9696

*The Greater Cleveland Automobile Dealers' Association
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Formerly Offered Programs:
Ryder Trucks
Refrigerant Certification Services
Snap-On
Minnesota Dept. of Transportation
Marine Safety Consultants/Tidewater School of Navigation
Rancho Santiago College
Penske Auto Centers (K-Mart)
Geneva Steel

Department of
Environmental Protection

Montgomery County
Maryland

Vehicle Maintenance
and Repair Series

Created and Developed by:
Mary Richmond and
David Rotolone,
Montgomery County
Department of Environmental
Protection
Spring 2001
Revised Summer 2002
by: Steve Martin

Introduction Letter

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Just the Facts About ...

Engine, Floor and Vehicle Washing

Vehicle Maintenance and Repair Series

Minimize Wastewater Generation

Vehicle maintenance and repair shops can generate wastewater from engine, vehicle and floor washing. Wastewater includes any water or fluids that go down floor drains or sinks. Because, vehicle repair wastewater may contain chemicals such as oils, degreasers, heavy metals, antifreeze, and solvents, the wastewater may be considered a hazardous waste. Wastewater contaminated with these chemicals can cause serious pollution if discharged to stormdrains, or septic systems.

Did you know?

- Stormdrain inlets collect stormwater and guide it through a series of pipes or open channels to streams, and lakes. Stormdrains are intended to only manage rainwater. Nothing else should go down the stormdrain. Wastewater from vehicle repair shops, such as engine, floor and vehicle wash water, can severely impair water quality and public health. This polluted water can kill fish or make the fish unhealthy for people to eat, and can even contaminate the water we drink.
- Even biodegradable detergents are toxic to fish.
- The Clean Water Act makes it illegal to discharge pollutants to surface waters; violators can face fines of up to $25,000 per day!
- Vehicle maintenance and repair shops may be required to have a general stormwater discharge permit under the National Pollutant Discharge Elimination System (NPDES) program.

Effective Approaches

Using some of the techniques outlined in this factsheet will significantly reduce the amount of wastewater your shop produces. For example, by practicing good housekeeping techniques, using less hazardous products, keeping a dry shop, and following the ***Four-Step Floor Cleanup Method,*** you can significantly reduce the amount of wastewater your shop produces and prevent your wastewater from becoming contaminated with hazardous waste.

Keep a Dry Shop

The following simple steps can put you on the road to becoming a dry shop:

- Prevent spills from reaching the floor by utilizing secondary containment, funnel drum covers, and bulk pressurized overhead fluid delivery. (See accompanying factsheet *Spill and Floor Cleanup Vendor List*.)
- Have mechanics carry rags so that small spills can be wiped dry as soon as they occur.
- Engine cleaning and steam cleaning should be done on-site only if you are equipped to capture all water and wastes. The best system is to completely recycle the washwater. You will need to remove oils and grease in an oil/water separator before discharging to the sanitary sewer. Contact the Washington Suburban Sanitary Commission (WSSC) for information. NEVER discharge this waste to a stormdrain or septic system.
- Never hose down your work area. This practice generates large quantities of contaminated wash water that is discharged to a sewer or worse is flushed out of the shop to a stormdrain.
- If you use a pressure washer to clean the floor, be sure the wash water is disposed of properly. Even if pressure washing is performed by a contractor, your shop is responsible for proper management of the washwater and can be held liable for its illegal disposal.
- If floor cleaning is necessary, use a wet mop with a mild, non-caustic detergent. Dump wash water down a sink or toilet. If there is a question regarding chemicals discharged to the sanitary sewer call WSSC at 301.206.8526.
- Consider sealing your shop floor with epoxy or other suitable sealant. An epoxy-sealed floor will not absorb spills as a concrete floor does; makes clean-up easier and requires less time and water to clean, and lasts for years.
- Keep floor drains covered except when specifically needed. There are inexpensive covers available. Consider sealing your floor drains.
- Place a notice over sinks and drains indicating what materials may or may not be disposed of in them.
- If you wash vehicles on-site, use less hazardous soaps to help prevent wastewater and sludges from becoming hazardous waste and DO NOT discharge wash water to the stormdrain. Consider using a washwater recycling system.

Know Where Drains Lead

It is important to determine where all of your drains lead. If you are unsure from your building plans where the drains lead, you can use dye or smoke tests to assist in locating the discharge points. Prior to conducting any of these tests, you must contact WSSC at 301.206.4003 and the Montgomery County Department of Environmental Protection at 240.777.7770.

Clean-up Approach

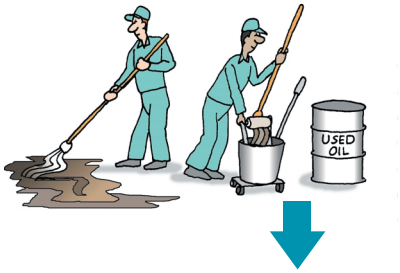
If your spill can be cleaned with three or fewer rags, use rags to clean the spill until the floor is dry. Place used rags in properly labeled waste containers and send rags to an industrial laundry. Do not saturate the rags, otherwise you will have drips on the floor as you transfer them to the waste containers.

Gas/Solvent Spills:

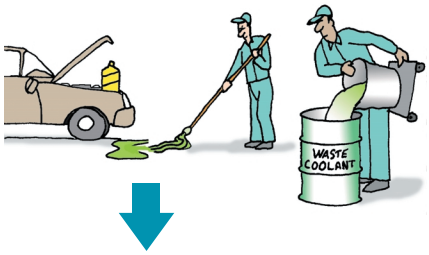
- Have a spill kit labeled "*gas/solvent spill kit"* readily accessible. Use absorbent and place used absorbent in a properly labeled waste container. Remember, absorbent contaminated with gasoline or solvent must be disposed of as hazardous waste.

Four-Step Floor Cleanup Method:

1 If spill contains oil, remove the oil portion of the spill first with your spill kit for oil spills. Using a hydrophobic mop, a mop which only absorbs oil, mop up spill restricting the back-and-forth movement of the mop to avoid spreading oil. Transfer collected oil to a properly labeled waste oil container for recycling.



2 ***For Antifreeze Spills:*** If petroleum products are present, make sure you first remove the oil portion (step 1). Have a spill kit labeled "antifreeze spill kit" readily accessible. Mop spill immediately using a dedicated cloth mop (a cloth mop only used for antifreeze). Transfer collected antifreeze to a properly labeled antifreeze waste container for recycling.



3 Use rags to dry the floor. Place used rags in properly labeled waste containers and send rags to an industrial laundry. Do not saturate the rags, otherwise you will have drips on the floor as you transfer them to the waste containers.

4 Use a wet mop only if necessary for final cleaning. Use mild, non-caustic detergent. Caustic detergents are corrosive to skin, eyes, and mucous membranes, and can react with other chemicals. Refer to the *Your Generator Status* factsheet for a definition of corrosive products.

Remember:

For a larger spill which has reached the outdoors or occurs outdoors, immediately block the stormdrain to prevent its entry into the waterways and contain the spill with the appropriate socks/booms. Contact the Montgomery County Fire Department at 911 and the Montgomery County Department of Environmental Protection at 240.777.7770. If your shop has interior floor drains, immediately block the floor drain. If the spill enters the floor drain, contact WSSC at 301.206.8526.

Contact Information:

Contact the Maryland Department of the Environment (MDE) at 1.800.633.6101 to obtain a NPDES permit.
Contact the Washington Sanitary Sewer Commission (WSSC) at 301.206.8526 prior to discharging wastewater into the sanitary sewer.

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For more information:

Department of Environmental Protection / Montgomery County, Maryland
255 Rockville Pike, Suite 120, Rockville, MD 20850
240.777.7770 fax: 240.777.7765
e-mail: help@askDEP.com

askDEP.com
We've got answers!

Just the Facts About ...

Spill & Floor Cleanup Vendor List

Vehicle Maintenance and Repair Series

A number of companies provide spill and floor cleanup supplies. Provided is a list of some of the companies with which the Montgomery County Department of Environmental Protection is familiar. Other vendors may provide similar or identical products and services. The Department of Environmental Protection does not convey and should not be interpreted as conveying approval, endorsement, or recommendation for any of these firms or their respective products.

Name	Location	Phone Number
Aero Tec Laboratories	Ramsey NJ	800.526.5330
Andax Environmental Corp.	Rutherford NJ	800.999.1358
Bio Systems	Middletown CT	800.711.6776
Carylon Corp.	Chicago IL	800.621.4342
Enviro Supply and Service	Fountain Valley CA	800.201.8150
Environetics Inc.	Lockport IL	815.838.8331
ILC Dover	Frederica DE	800.631.9567
Lab Safety Supply	Janesville WI	800.356.0783
Label Master	Chicago IL	800.621.5808
Myclex Technologies Group	Gainesville GA	888.306.6843
Oil Skimmers Inc.	Cleveland OH	800.200.4603
Oil Stop Inc.	Harvey LA	504.361.4321
Parker Systems Inc.	Chesapeake VA	800.666.0006
Petro Green Inc.	Dallas TX	972.484.7336
Petro Marine Company Inc.	Morganville NJ	800.492.3533
New Pig	Tipton PA	800.468.4647
Safety Storage Inc.	Hollister CA	800.344.6539
Sorbent Products Inc.	Somerset NJ	800.333.7672
Spill 911	Carmel IN	800.474.5911
Hydrophobic Mops		
CCP	Cleveland OH	800.321.1050
Hy-Tec Environmental	Walnut Creek CA	800.336.4499

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Just the Facts About ...

Spill Prevention and Cleanup

Vehicle Maintenance and Repair Series

Prevent Spills

The purpose of spill prevention is to prevent and contain spills, thus avoiding discharges to the stormwater or the sanitary sewer system. If you are successful, your discharges will be limited to wastewater from your bathrooms entering the sewers and rain water from your roof and parking lot flowing down storm drains. Cleanup cost can be very high, so it pays to prevent spills or leaks. A spill that reaches an underground drinking water source can cost tens of thousands of dollars to cleanup. The person or business causing the spill and the owner of the property where the pollution occurred are financially responsible for clean up regardless of fault.

Did you know?

- Any oil or petroleum products, chemical or waste that is released in any manner constitutes a spill.
- Stormdrain inlets collect stormwater and guide it through pipes or channels to streams, lakes and rivers.
- A single drum that spills and has its contents reach the storm drain can cost 10-100 times the value of the raw material in cleanup costs.
- If a spill reaches the storm drain, you can face fines of up to $25,000 per day!
- About 2.1 tons of crankcase oil ends up in our rivers and streams every year. A single quart of motor oil can pollute 250,000 gallons of drinking water.
- If spills are not cleaned up immediately, workers can slip and fall.

Spill Prevention Techniques

The following actions can help prevent spills and minimize the environmental, health and liability consequences should a spill occur.

- Keep area clean, orderly, and free of spills. Mechanics should carry rags so that small spills can be wiped dry when they occur. Soiled rags should be kept in closed containers labeled "*Soiled Rags*". Rags should be laundered by an industrial rag service. See the *Shop Towels and Absorbents* factsheet.
- Ensure that containers are in good condition. Containers that are severely dented, corroded, rusted, expanded, leaking, cracked, or otherwise damaged need to be replaced.
- Use pumps and spigots for dispensing shop liquids, and self closing funnels when transferring spent materials to reduce the chance of spills. Keep drums closed when not adding or removing materials.
- Ensure that piping, faucets, valves, and pumps to storage containers and tanks are free of leaks.
- *"Properly"* label and store all containers. Refer to the material safety data sheets (MSDS). Ensure that containers holding incompatible wastes are kept apart by a physical barrier of sufficient distance and that secondary containment is utilized. Secondary containment can be as easy as placing drums in a water trough or completely encircling them with curbing.
- Use drip pans to minimize leaks and spills onto the floor when transferring fluids or storing leaking vehicles. Always keep drip pans under cars while you unclip hoses, unscrew filters or remove other parts.
- Label your storm drains as a reminder that stormdrains discharge to local waterways. Labels are available by contacting Montgomery County Department of Environmental Protection at 240.777.7770.
- Each service bay should be provided with a waste collection station and labeled waste containers for each type of waste fluid. For example *"waste oil only", "waste antifreeze", "waste solvents".*

Spill Preparedness

Being prepared for possible spill events such as having the appropriate spill equipment and training, can greatly minimize your cleanup costs, possible fines, and potential liability. Below are some general guidelines.

- Make sure your shop has a spill kit and that it is easily accessible and staff is trained to use the kits.
- Ensure that your spill kits contain the equipment and protective gear for all your shops particular materials and wastes. Refer to your MSDS sheets for the

necessary equipment and protective gear. Label each separate kit. For example, *"solvent spill kit", "oil spill kit".*

- For small spills which can be cleaned with three or fewer rags, use rags to clean the spill until the floor is dry. Place used rags in a properly labeled waste container.
- For medium spills, those requiring more than three rags, immediately contain the spill and use the four -step cleanup method in this factsheet.
- If a larger spill occurs, which has spread to the outdoors or occurs outdoors, immediately block the storm drain to prevent its entry into the waterways and contain the spill with the appropriate socks/booms. Contact the fire department at 911 and Montgomery County Department of Environmental Protection at 240.777.7770.

Cleanup Approach

Gas/Solvent Spills:

Have a spill kit labeled "*gas/solvent spill kit"* readily accessible. Use absorbent and place used absorbent in a properly labeled waste container. Remember, absorbent contaminated with gasoline or solvent must be disposed of as hazardous waste.

1 *Four-Step Floor Cleanup Method:*

If spill contains oil, remove the oil portion of the spill first with your spill kit for oil spills. Using a hydrophobic mop, a mop which only absorbs oil, mop spill restricting back-and-forth movement of mop top to avoid spreading spill. Transfer collected oil to a properly labeled waste oil container for recycling.

2 *Antifreeze Containing Spill:*

If petroleum products are present, make sure you first remove the oil portion (step 1). Have a spill kit labeled *"antifreeze spill kit"* readily accessible. Mop spill immediately using a dedicated cloth mop(a cloth mop only used for antifreeze). Transfer collected antifreeze to a properly labeled antifreeze waste container for recycling.

3

Use rags to dry the floor. Place used rags in properly labeled waste containers and send rags to an industrial laundry. Do not saturate the rags; otherwise you will have drips on the floor as you transfer them to the waste containers.

4

Use a wet mop only if necessary for final cleaning. Use mild, non-caustic detergent. Caustic detergents are corrosive to skin, eyes and mucous membranes, and can react with other chemicals. Refer to the *Your Generator Status* factsheet for a definition of corrosive products.

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Spill & Floor Cleanup Vendor List

Vehicle Maintenance and Repair Series

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Enviro Supply and Service	Fountain Valley CA	800.201.8150
Environetics Inc.	Lockport IL	815.838.8331
ILC Dover	Frederica DE	800.631.9567
Lab Safety Supply	Janesville WI	800.356.0783
Label Master	Chicago IL	800.621.5808
Myclex Technologies Group	Gainesville GA	888.306.6843
Oil Skimmers Inc.	Cleveland OH	800.200.4603
Oil Stop Inc.	Harvey LA	504.361.4321
Parker Systems Inc.	Chesapeake VA	800.666.0006
Petro Green Inc.	Dallas TX	972.484.7336
Petro Marine Company Inc.	Morganville NJ	800.492.3533
New Pig	Tipton PA	800.468.4647
Safety Storage Inc.	Hollister CA	800.344.6539
Sorbent Products Inc.	Somerset NJ	800.333.7672
Spill 911	Carmel IN	800.474.5911
Hydrophobic Mops		
CCP	Cleveland OH	800.321.1050
Hy-Tec Environmental	Walnut Creek CA	800.336.4499

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Just the Facts About ...

Your Generator Status

Vehicle Maintenance and Repair Series

What's Your Generator Status?

It is important to know whether you generate hazardous waste and the amount of hazardous waste you generate. It is equally important to realize that you may be able to significantly reduce this quantity, saving your shop both money and time.

Defining A Waste

A material is considered a waste by state and federal regulations when it can no longer be used or reused and requires treatment or disposal. Before a waste can be treated or disposed, you have to determine if the waste is non-hazardous or hazardous. You are ultimately responsible for determining whether the wastes generated in your shop are regulated as hazardous wastes. If you suspect that a waste may be hazardous but are not sure, either assume it is hazardous and pay for proper waste disposal or recycling, or have the waste tested to get a definitive determination.

Local laboratories and hazardous waste disposal companies can sample and test a waste for you using approved methods. The test results will tell you whether the waste is hazardous or not. If it is not hazardous, and if both the chemicals and process you use to generate the waste do not change, you can rely on the test results for that one sample as proof that the waste is not hazardous in the future. That is, the waste generated by the process in the future will be assumed to have characteristics similar to the current waste. Always keep a file copy of each test result in the event a hazardous waste inspector ever questions your waste determination.

Is Your Waste Hazardous?

Knowing what makes a waste hazardous is important for understanding why it should be reduced or eliminated, and for selecting less- hazardous alternatives. There are two types of regulated hazardous waste defined by the U. S. Environmental Protection Agency (EPA): characteristic and listed.

Characteristic

A waste may be considered hazardous if it exhibits any one of the following characteristics.

Ignitable: An ignitable waste is a liquid with a flash point below 140 degrees F; a non-liquid capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes; and/or a flammable compressed gas. Examples include solvents and mineral spirits.

Corrosive: A corrosive waste is an aqueous based liquid with a pH less than or equal to 2.0 (strong acid) or a pH greater than or equal to 12.5 (strong base). Examples include battery acid and alkaline cleaning solvents.

Reactive: Reactive wastes are unstable or undergo violent chemical reactions when combined with water or other materials. Examples include hydrogen sulfide and bleaches.

Toxic: A toxic characteristic waste is hazardous due to the presence of metals or organic compounds. A test, called the Toxicity Characteristic Leaching Procedure (TCLP) is performed by a laboratory. There are 40 constituents that EPA has established concentration limits for in the TCLP test. Examples include wastes with high metal (lead, silver, etc.) content, such as hot tank wastes.

Listed

A waste can also be considered hazardous if it appears on any one of four lists of hazardous wastes contained in the federal Resource Conservation and Recovery Act (RCRA) regulations. These wastes contain toxic constituents that have been found to be harmful to human health and the environment. More than 400 chemicals can be found on these lists.

F-Listed: Wastes derived from a wide variety of sources. Examples include specific halogenated solvents used in degreasing and non-halogenated solvents (xylene and acetone).

K-Listed: Wastes derived from specific manufacturing processes.

P-Listed (Acute) and U-Listed: Toxic discarded chemical products or off-specification products and residues.

Determining Your Generator Status

If your shop creates hazardous waste, you are considered a hazardous waste generator. Your Material Safety Data Sheets will provide you with much of the information needed. To determine your generator status see the accompanying Generator Status Worksheets. There are two types of hazardous waste generators in the state of Maryland: small and large. Your generator status depends on the amount and type of hazardous waste your shop produces each calendar month. Note: the amount of waste for each category applies to all hazardous waste substances **combined**, not for each waste. Also, if a hazardous waste is mixed with a non-hazardous waste, the entire weight of the mixture has to be considered if the mixture includes a listed waste or if a mixture exhibits a characteristic.

You are a Large Quantity Generator if you generate:

- 220 pounds (approximately 27 gallons or 1/2 drum) or more per month of hazardous waste
- more than 2.2 pounds of acute hazardous waste per month
- 220 pounds or more of cleanup debris containing hazardous waste

or

- if at any time you store 220 pounds or more of hazardous waste on site.

You are a Small Quantity Generator if you generate:

- less than 220 pounds per month
- no more than 2.2 pounds of acute hazardous waste

and

- if you never store more than 220 pounds (27 gallons) of hazardous waste on-site.

OSHA Standards

To be in compliance with the U. S. Occupational Safety and Health Administration (OSHA), keep all of your material safety data sheets (MSDS) at a central location where your employees have access to them. In addition, label all containers and store properly in accordance with the MSDS sheets. All employees must be made aware of the location of these sheets and all hazards associated with the use of the chemicals. For more information contact the Maryland Department of the Environment at 410.537.3800. See the accompanying factsheet *Hazardous and Toxic Substances Employee Right to Know Law.*

How to minimize your waste generation

After you determine your generator status (see the Generator Status Worksheets), and use the factsheets contained in the vehicle maintenance and repair series to minimize your hazardous waste stream.

Montgomery County Hazardous Materials Use Regulations

Montgomery County requires any business that uses, stores, treats or transfers 50 pounds (5 gallons) or more of hazardous materials, including waste, at any time, to:

- register annually with the Montgomery County Department of Fire and Rescue Services, Local Emergency Planning Council (LEPC); and
- obtain a Hazardous Materials Use Certificate.

For more information on hazardous materials use certificate registration, contact the Montgomery County Division of Emergency Management, Department of Fire and Rescue Services, 240.777.2300. An application is included in the LEPC folder in the back of the manual.

Special Requirements for Small Quantity Generators

Below are some of the requirements for Small Quantity Generators in the state of Maryland. For specific details, please contact the Maryland Department of the Environment, Hazardous Waste Program at 410.537.3343.

- Legitimately use, reuse, or recycle your waste on site, or ensure delivery of your hazardous waste to one of the following:
- A state or federally regulated hazardous waste treatment, storage, or disposal facility (TSDF)
- A facility permitted, licensed, or registered by the state to manage municipal or industrial solid waste.
- A facility that beneficially uses, reuses, or legitimately recycles or reclaims its wastes or treats the waste before beneficial use, reuse, or legitimate recycling or reclamation.
- The EcoWise program run by Montgomery County.

What is EcoWise?

If you are a Maryland Small Quantity Generator, the EcoWise program provides Montgomery County businesses the opportunity to dispose of small quantities of hazardous wastes in an environmentally sound manner at a fraction of the cost of direct contracting with a hazardous waste management firm. For more information about the EcoWise program, contact Montgomery County Division of Solid Waste Services at 301.840.2370 or 2774, or http:/mcrecycles.org/wastereduction/ecowise.htm Also, see the EcoWise brochure in the folder in the back of the manual.

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For more information:

Department of Environmental Protection / Montgomery County, Maryland
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240.777.7770 fax: 240.777.7765
e-mail: help@askDEP.com

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Just the Facts About ...

Hazardous & Toxic Substances, Employees "Right-to-Know" Law

Vehicle Maintenance and Repair Series

What is "Right to Know"?

In 1984 the Maryland General Assembly enacted legislation designed to give employees information about hazardous substances in their workplaces. This law, sometimes called the employee "Right-to-Know" Law, was amended in 1990 to include the provisions of the federal standard, 29CFR 1910.1200. The Right-to-Know Law is part of the Maryland Occupational Safety and Health (MOSH) Act, and the provisions of the MOSH Act apply to the administration and enforcement of this law.

The "Right-to-Know" Law requires employers to obtain, maintain, and submit certain information. It applies to most employers in the State and covers more than 50,000 chemicals, as well as hundreds of thousands of products.

Employee Rights

The "Right-to-Know" Law gives employees a right to learn about chemical hazards in the workplace and how to work safely with these materials. The law requires employers to prepare a list of all hazardous and toxic substances used in the workplace and to obtain material safety data sheets (MSDS) for these substances. Employers also must label or otherwise identify containers of hazardous chemicals. Employees must be told how to obtain information about the hazardous substances in their workplaces and must be provided proper training in the safe use of these materials.

Hazardous Chemicals?

A chemical may be considered hazardous if it exhibits any one of the following characteristics: Ignitability; Corrosivity; Reactivity; or Toxicity - refer to the Fact Sheet entitled "Your Generator Status" for an in depth explanation of these characteristics. The definition of hazardous chemicals includes physical hazards such as compressed oxidizers, as well as such health hazards as carcinogens, irritants, corrosives, sensitizers and agents which may damage the lungs, skin, eyes or mucous membranes. Also covered are consumer products when they are used in a form, concentration or manner different from that used by consumers, or when employee exposure is greater than that of a consumer. Most places of employment in the State have some substances that meet the definition of a hazardous chemical. Products such as paints, glues, cleaning solutions, compressed gases, floor cleaners, and many commonly found substances generally are considered hazardous chemicals under the Employee "Right-to-Know" Law.

Chemical Quantities?

The "Right-to-Know" Law does not contain quantity or size limitations. If you use or store, handle, package or repackage, distribute, import or sell any hazardous chemicals or substances in your workplace, you must comply with this law.

How do I Comply?

1. Make an inventory of all materials. Walk around your workplace and prepare a written inventory of all materials that may be hazardous, regardless of quantity. Note the name of each product and information about the manufacturer or distributor. Don't forget such things as compressed gasses, welding rods, alloy metals, and by-products that may result from a process your company uses.

2. Obtain Material Safety Data Sheets (MSDS). A MSDS is a fact sheet summarizing information about material identification; hazardous ingredients; health, physical, and fire hazards; first aid; chemical reactivities and incompatibilities; spill, leak, and disposal procedures; and protective measures required for safe handling and storage. Manufacturers and importers are required to provide an MSDS with the initial shipment of a product to distributors and purchasers, and must provide updated information when it becomes available. For each substance noted during your inventory for which you do not have an MSDS, request a MSDS from the manufacturer or distributor. Use the information on the MSDS to determine the chemical name and to identify hazards of your inventory materials.

3. Prepare a chemical information list. Using the material safety data sheets and the inventory, prepare a chemical information list for your workplace. The list must: be arranged in alphabetical order according to common name; contain the chemical name; and identify the work area in which the hazardous chemical is found. If a product is a consumer product and your

employees are exposed more frequently or in greater amounts than the typical consumer, it must be included on the list. However, a list is not required in work operations where employees handle chemicals only in sealed containers which are not opened under normal conditions of use, such as are found in warehousing or retail sales.

4.Send the chemical information list to the Maryland Department of the Environment (MDE). Send the list to:

Mr. Awadnarine Balram
Maryland Department of the Environment
Technical & Regulatory Services Admin.
Community Right-to-Know Section
2500 Broening Highway
Baltimore, MD 21224
410.537.3446

5. Develop a system for updating the list. As each new substance arrives in your workplace, be sure to obtain the MSDS. When new materials are obtained, you must add them to the chemical list within 30 days. Be sure to include the date the chemical is added to the list. Re-alphabetize the chemical list every two years and submit the new list to MDE. The employer must maintain each chemical information list for 40 years.

6. Check to see that all containers are labeled. Ensure that all containers of hazardous substances in the workplace are labeled. The label must include both the identity of the hazardous chemical and the appropriate hazard warnings. Check all incoming shipments of hazardous substances to be sure they are labeled. If a container is not labeled, obtain a label from the manufacturer, importer, or distributor, or prepare a label using information from these sources or the MSDS. Instruct employees on the importance of labeling portable receptacles into which they have poured hazardous substances. If the portable container is for immediate use, then it does not have to be labeled. However, if the container is used by more than one person, or on more than one shift, or if it may be left unattended, it must be labeled.

7. Develop an employee training and notification program. Employers must develop an employee training and education program that informs employees of the requirements of the law, the employer's hazard communication methods, and the employee's rights. The program also must include information about the nature of the hazards, appropriate work practices, control programs, protective measures, and emergency procedures. Specific legal requirements are detailed in 29 CFR 1910.1200(h) which can be found at http://www.osha.gov/comp-links.html

8. Train and educate employees. Initial training must be given to all current employees, and to new employees prior to their first assignment. Additional training must be provided when: new hazards are introduced into the workplace; exposure to hazardous chemicals changes; employees are subject to increased exposure due to changes in work practices, processes or equipment; and additional information about hazardous substances in the workplace becomes available. Be sure to document and keep records of the training given.

9. Develop a written hazard communication program. Your written hazard communication program describes how your Right-to-Know program meets the requirements of the MOSH Law and Regulations. This program must include: information about where your chemical information list and MSDSs are maintained and how employees may access them; a description of your labeling system and other forms of warnings; how you provide employees with information about hazardous, non- routine tasks, and; how employees receive information about hazardous chemicals in unlabeled pipes. The written program must be available to employees, their designated representatives, and representatives of the Commissioner of Labor and Industry.

Additional Information.

You can obtain additional information by contacting:

MOSH Compliance Region 4 Office
312 Marshall Ave., Suite 602
Laurel, MD 20707
Tel: 301.483.8310
Fax: 301.483.6996

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For more information:

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255 Rockville Pike, Suite 120, Rockville, MD 20850
240.777.7770 fax: 240.777.7765
e-mail: help@askDEP.com

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Just the Facts About ...

Generator Status Worksheet

Vehicle Maintenance and Repair Series

In order to determine whether your shop is a small quantity generator or a large quantity generator, complete the worksheet below to identify and quantify hazardous wastes now leaving your shop. See the factsheet titled " Your Generator Status" for information concerning your regulatory requirements.

Process	Traditional Practice	Waste Stream	Is Waste Hazardous? (See notes below)	Amount per Month	
				Quantity of hazardous waste	Disposal cost
Parts washing	Solvent service	Waste solvent[A]			
Coolant changing	Off-site recycling or disposal	Waste antifreeze[B]			
Brake washing	Aerosol spray cans	Waste cans[C]			
	Solvent Service	Waste solvent[D]			
Lubricating and spot cleaning	Aerosol Spray cans	Waste cans[C]			
		Used rags or paper towels[E]			
Floor cleaning	Disposable rags or paper towels	Used rags or paper towels[E]			
	Dry absorbent	Used absorbent[F]			
	Hosing with water[H]	Trap or separator sludges[G]			
	Cleaning service	Wash or mop water[H]			
Other Processes		Waste gasoline etc.			
Determine your generator status by adding up the quantity of all hazardous wastes (Multiply gallons by 8 to convert to pounds)					
Determine your monthly waste management costs for all waste streams					

[A] Waste solvents and solvent sludges are generally hazardous unless testing demonstrates otherwise.

[B] Waste antifreeze may be hazardous depending on its metal concentration. In a 1999 federal survey of sampling studies about half the waste antifreeze samples proved to be hazardous.

[C] Used aerosol cans should be disposed of in trash or recycled as scrap metal if they are completely empty. Dispose of used aerosol cans as hazardous waste if they are not empty and their contents are hazardous. Do not count empties as hazardous waste.

[D] Spent brake washing solvent is very likely to be a hazardous waste.

[E] Used rags and paper towels are very likely to be a hazardous waste if they are contaminated with gasoline or solvent. If the solvent product used contained an F-listed chemical at a 10% or greater concentration, the contaminated rags or towels will be a hazardous waste. If solvent on rags or towels is not an F-Listed chemical, use your knowledge or test the rags or towels to determine whether they are hazardous. If they are hazardous, it is illegal to dispose of in the trash. Have used rags laundered (recycled) by an industrial laundry, or dispose of them as a hazardous waste.

[F] Used absorbents soaked with waste oil are not regulated unless they are also contaminated with hazardous wastes.

[G] Sludges from traps and oil/water separators may contain heavy metals or solvents. Test sludges at least once to determine whether they contain heavy metals or solvents.

[H] Wash water or mop water is generally not counted as a hazardous waste. However, if wash or mop meets the criteria for a hazardous waste, it may not be placed in a sanitary sewer. Even if it is not hazardous waste, wash or mop water must meet sewer discharge requirements limiting its oil and grease content, etc. Contact Washington Suburban Sanitary Commission for requirements at 301.206.4003.

Note: Used oil, brake, transmission, and hydraulic fluids; oil filters; refrigerant from air conditioning systems; and batteries are not addressed here because if they are recycled in accordance with state and federal laws, they are not counted as hazardous wastes when determining generator status.

Calculate Your New Generator Status

After implementing as many Best Practices as possible, recalculate your waste volumes and costs.

Process	Best practice	Waste stream	Is waste hazardous? (see notes below)	Amount per Month	
				Quantity of hazardous waste	Disposal Cost
Parts washing	Aqueous spray cabinet, Ultrasonic unit, Microbial Sinktop, or Immersion unit	Waste filter[I] Waste aqueous solution[J]			
Coolant Charging	On site or Off-site recycling	Sludge or resins[K]			
		Waste filters[L]			
Brake washing	Aqueous brake washing	Waste solutions[J]			
Lubricating and spot cleaning	Refillable spray bottles	Used rags or paper towels[E]			
Floor cleaning	Spill prevention and dry cleanup methods	Used rags or paper towels[E]			
		Mop water[M]			
		Used Absorbent[N]			
Other processes		Waste gasoline, etc.			
Determine your new generator status by adding the monthly quantities of all hazardous wastes (multiply by 8 to convert to pounds)					
Estimate your new monthly waste disposal costs for all waste streams					

[I] Waste metal filters should be recycled with oil filters as hazardous waste-exempt scrap metal waste; other filters should be disposed of as a hazardous waste or tested. In one study, one out of two filters tested positive as hazardous waste because of the presence of lead.

[J] Waste aqueous solution should be shipped off-site as a hazardous waste or tested. In two studies, 75 percent of waste aqueous solutions tested positive as hazardous wastes because of their lead and cadmium concentrations. Microbial solutions may last for years.

[K] Antifreeze recycling sludges or resins should be shipped off-site as a hazardous waste or tested. In a 1999 federal survey of sampling studies about half the waste antifreeze samples proved to be hazardous wastes due to metals content.

[L] Antifreeze recycling filters made of metal should be recycled with oil filters as a hazardous waste-exempt scrap metal waste; for nonmetal filters, make your determination based on your process knowledge or testing.

[M] Mop water should be nonhazardous and can be disposed of in a sanitary sewer, provided that all floor spills are first cleaned up using the 4 step dry cleanup method. If the floor drain is capped, pour the mop water into a sink or flush it down a toilet (Washington Suburban Sanitary Commission approval is required). Mop water and other waste materials should never be discharged to a storm drain, ditch, dry well, or septic system.

[N] Used absorbent should be used only to clean up gasoline or solvent spills; in emergency situations; or for clean-up of old, pitted shop floors. Test the used absorbent or use your knowledge of what was spilled to determine whether the used absorbent is hazardous. Absorbent saturated with gasoline or solvents will very likely be hazardous.

Note: Used oil; brake, transmission, and hydraulic fluids; oil filters; refrigerant from air conditioning systems; and batteries are not addressed here because if they are recycled in accordance with state and federal laws, they are not counted as hazardous wastes when determining generator status.

The information in this fact sheet was developed by the U.S. Environmental Protection Agency Region 9 pollution prevention program.

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For more information:

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Department of
Environmental Protection

Montgomery County
Maryland

Vehicle Maintenance
and Repair Series

Created and Developed by:
Mary Richmond and
David Rotolone,
Montgomery County
Department of Environmental
Protection
Spring 2001
Revised Summer 2002
by: Steve Martin

Introduction Letter

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Aerosol Cans

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Just the Facts About ...

Managing Used Oil

Vehicle Maintenance and Repair Series

Defining Used Oil

Used oil is defined as any petroleum based oil or any synthetic oil that has been used and is contaminated by physical or chemical impurities. Used lubricants and transmission fluid are considered used oil.

Through normal use, metal and dirt can contaminate vehicle oils. These potentially toxic contaminants could cause the used oil to be characterized as hazardous. Fortunately, used oils are exempt from federal and some state hazardous waste regulations as long as the oils are reused or recycled and are not mixed with other hazardous materials, such as chlorinated solvents.

Did you Know?

- Used engine oil contains toxic metals and/or additives that can contaminate both surface and ground water supplies?
- When disposed of improperly, used oil can spread to lakes, rivers and streams in sufficient concentration to poison fish and reduce oxygen levels essential to aquatic life.
- It only takes one pint of used oil to form a football field sized slick on a lake.
- Improper disposal of used oil can also contaminate groundwater supplies.
- As little as one quart of waste oil can contaminate two million gallons of our valuable and scarce drinking water supply.

Recycle Used Oil

Once oil has been used, it can be collected, recycled, and used over and over again. An estimated 380 million gallons of used oil are recycled each year in the U.S. Used oil can be recycled in the following ways:

- Reconditioned on site, which involves removing the impurities from the used oil and re-using it.
- Re-refined, which involves treating the oil to remove impurities so that it can be used as a base stock for new lubricating oil.

Re-refining prolongs the life of the oil resource indefinitely. There are a number of companies in the Washington Metropolitan Area that will collect used oil for recycling. See the *Vendor List for Auto Repair Shop Recycling and Disposal Services* for area vendors. Another recycling method is to process and burn oil for energy recovery, which involves removing water and particulates so that used oil can be burned as fuel for space heaters. Be advised that this use of used oil for space heaters is regulated under the Maryland Department of the Environment, Air and Radiation Management Administration, which can be contacted at 410.631.3230.

Housekeeping Practices

If you generate or handle used oil, there are good housekeeping practices developed by the U. S. Environmental Protection Agency that you must follow. These "management standards" are common sense, good business practices designed to ensure the safe handling of used oil, maximize recycling, and minimize disposal. The standards apply to all used oil handlers, regardless of the amount of oil they handle. These requirements relate to storage and cleaning of leaks and spills as follows:

- Keep storage tanks and containers in good condition with no signs of leaks or other deterioration.
- Used oil should be stored on a flat surface that does not allow used oil to seep through, such as cement or asphalt.
- Label storage tanks and containers as "Used Oil".
- Use a transporter with an EPA identification number when shipping used oil offsite.

Storage

Label all containers and tanks as "Used Oil," and store separately from other solvents and chemicals. Keep containers in

good condition.

Never mix used oil with hazardous waste. Your business may be required to comply with federal and state hazardous waste regulations if your oil becomes contaminated from mixing it with hazardous waste. Used oil mixed with hazardous waste has to be managed as hazardous waste. Hazardous waste disposal is a lengthy, costly and strict regulatory process. See the attached factsheet *Your Generator Status* for further details.

Prevention

Prevention is always the preferred method of spill control!

Take a moment each day to inspect your waste oil containers, storage tanks, fittings and connections to ensure they are well maintained. Always take steps to prevent leaks and spills. Keep machinery, equipment containers, and tanks in good working condition and always use funnels when transferring used oils. Should a spill occur, follow the 4-step cleanup method outlined below and have clearly marked spill kits readily accessible. (See the *Spill Prevention and Cleanup* factsheet for more information).

Spill Containment

If you have and oil leak or spill, contain it immediately! Stop the oil from flowing at the source. If a leak from a container or tank can't be stopped, catch and/or transfer the oil to another container. If the spill is large, contain the spill by surrounding the spill with a berm and cover all storm and floor drains to prevent oil from entering.

Four Step Cleanup Method

1. **Always** use a mop (hydrophobic) that absorbs oil only. Extraction devices (i.e. centrifuges, wringers and compactors) can be used to recover used oil from reusable mops and towels.
2. Use rags to dry surface.
3. Clean up the oil and recycle it as you would before it was spilled. Maximize the recovery of the used oil. Remove as much of the free flowing oil as possible from rags or mops used to clean up the spill.
4. Once the freeflowing oil has been removed from these materials, launder the rags and extract the oil from the mops for reuse. If the mop is no longer useable make sure the mop is not a hazardous waste and dispose of it appropriately.

Remove, repair or replace the defective tank or container immediately.

Avoid Costly Cleanups

Meeting the following conditions relieves service station dealers from responsibility for costly emergency response cleanups and liabilities associated with the off-site handling of used oil. To meet these conditions, service stations must comply with the management standards for used oil by not mixing used oil with any hazardous substances, by accepting used oil from Do-It-Yourselfers (DIYs) and sending to a licensed recycler for recycling.

Call the RCRA hotline for details regarding this liability exemption (703.412.9810 or 800.424.9346.

If this is not reason enough to convince you to do the right thing, consider the fines and other legal sanctions you can incur for improper storage and disposal of waste oil.

Clean Water Act violations may reach $25,000 per day, per offense and can include a significant jail sentence and this does not include the possible civil lawsuits and remediation requirements that may result from illegal waste oil disposal.

Do not risk your business, future and your hard earned money by illegally disposing of waste motor oil. Always save your receipts.

Underground Storage Tanks

Questions about Underground Storage Tanks (UST's) or aboveground storage tanks Contact the Maryland Department of the Environment (MDE) at 800.633.6101 for information about removing tanks, or other remediation alternatives.

If you have a leaking underground storage tank, contact MDE immediately, at the same number.

You may also contact the Montgomery County MD Department of Fire and Rescue Services at 240.777.2457 for additional information.

If your above ground tank is leaking contact the fire department immediately and contain the leak by placing a berm around the spill and all storm drains to prevent the contaminate from entering the waters.

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Just the Facts About ...

Vendor List for Auto Repair Shop Recycling and Disposal Services

Vehicle Maintenance and Repair Series

A number of companies around the Washington Metropolitan area provide used automotive recycling and disposal services. Provided is a list of some of the companies with which the Montgomery County MD Department of Environmental Protection is familiar. Other vendors may provide similar or identical products and services. The Montgomery County MD Department of Environmental Protection does not convey and should not be interpreted as conveying approval, endorsement, or recommendation for any of these firms or their respective products.

Name	Phone	Oil	Filters*	Antifreeze	Aerosol Cans	Hazmat	Batteries
A&A Environmental	410.636.3700	*	*	*	*	*	*
American Battery Corp.	301.840.0623						*
Antifreeze Recyclers Int.	703.670.7224			*			
Antifreeze Technology Systems	301.473.4160			*			
C&R Industries	301.441.4824			*			
Chesapeake Environmental	888.773.2784		*	*			
Clean Harbors	410.244.8200	*	*	*	*	*	*
Clean Venture	410.368.9170	*	*	*	*	*	*
International Petroleum	800.222.2511	*		*			
Mid-States Oil	800.331.5408	*	*	*			
R-Way Services	800.673.8521		*	*	*		
Safety-Kleen	800.638.4440	*	*	*	*	*	
Total Recycling Services	800.486.1080		*		*	*	
Tri-County Industries	301.937.8611	*		*		*	
U.S. Filter	410.284.1717	*	*	*		*	

*** Some vendors may charge more to recycle crushed oil filters.**

Department of
Environmental Protection

Montgomery County
Maryland

Vehicle Maintenance
and Repair Series

Created and Developed by:
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David Rotolone,
Montgomery County
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Spring 2001
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Introduction Letter

Parts Washing

Aerosol Cans

Refrigerants

Engine, Floor & Vehicle Washing

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Shop Towels and Absorbents

Vehicle Maintenance and Repair Series

Shop Towels

Most automotive shops use towels, rags and wipes to clean spills. This method is time-tested and is a quick and easy way to perform clean-ups with minimal expense. Shop towels are also used for applying cleaning solvents to parts, cleaning of dirt and excess liquids.

Management of Used Shop Towels

Used towels containing oil, solvent, or other potentially hazardous waste should be stored in a non-combustible container away from any ignition source between the time they are used and washed for re-use, or properly disposed. This method will reduce the risk of fire and explosion. The Department of Environmental Protection (DEP) recommends contracting with a laundry to wash and reuse your shop towels. Note that free liquids must be removed from the container before laundering. Used shop towels that are laundered are not considered a solid waste and therefore, are not a hazardous waste. Therefore, if you launder your shop towels, testing of shop towels and other hazardous waste requirements are not necessary. In addition, using a laundry service can save you money by reducing shop towel purchase and disposal costs. See the vendor list for *shop towel recycling and cleaning.*

Absorbents

Absorbents should be used for spills and leaks of gasoline and solvents and other liquids resulting from vehicle maintenance and fluid servicing.

Proper Management of Absorbents

To avoid a potential fire or explosion hazard, ALWAYS use absorbent to clean gas or solvent spills.

Always follow the easy 4-Step Floor Cleanup Method when cleaning non-hazardous spills. See the fact sheet *"Spill Prevention and Cleanup"* for details about the 4-step cleanup method.

Absorbent Disposal

Gasoline and solvents are hazardous and must be treated as hazardous waste. Always use absorbents wisely. Granular material such as kitty litter, rice hulls or other readily available material, as well as pigs, pads, pillows and mats are common products to have on hand to prevent spills from spreading. After use, wring out the absorbed fluid into the proper container for recycling or disposal and reuse the absorbents. If the spill is from a hazardous material and you choose to dispose of, rather than recycle the used absorbent, you must dispose of the absorbent as a hazardous waste.

Once the absorbent comes in contact with a hazardous waste it assumes the characteristics of the hazardous waste and must be disposed of as such. Never mix absorbent used for hazardous spill cleanup with absorbent used to clean non-hazardous spills. Mixing of the two will result in the entire mixture becoming hazardous and it must be handled as such. Absorbent used to clean a hazardous material spill counts toward your hazardous waste generator status. (See attached fact sheet *Your Generator Status).*

If you have a spill of any hazardous material, you must contain the spill, absorb the spill by applying absorbent and dispose the absorbent as a hazardous waste. If the spill is large, or enters a storm drain, contact the fire department and evacuate the building.

If your facility uses other absorbents such as kitty litter, sawdust, or a similar substance to clean up spills on site, it is important to

dispose of these used absorbents properly based on the material they absorbed. For example, absorbents used to clean a solvent spill need to be disposed of as a used solvent.

Oil Spills

Mop it up first, use a hydrophobic mop only, and restrict back and forth movement of mop to avoid spreading the spill. Once you have cleaned the spill, transfer to used oil drum for recycling. See the fact sheet *"Spill Prevention and Cleanup"* for details about hydrophobic mops and the 4-step method of cleanup.

Antifreeze Spills

Mop up spills immediately, using a dedicated cloth mop and then transfer to waste coolant drum for recycling. Use towels to dry surface and clean the floor until dry. Do not saturate towels and send towels to an industrial laundry or properly dispose of when done. Use a wet mop only if necessary for final cleaning.

Use mild, non-caustic detergent and dump wash water down a sink or toilet (but check with the Washington Suburban Sanitary Commission at 301.206.4003 first.).

Never dispose of waste water in a storm drain!

Improper disposal of waste water can cause serious water quality problems and may harm people, pets or wildlife. Improper disposal of any pollutant is illegal and is punishable by fines of $25,000 per day and possible jail time.

Never! Dispose of hazardous waste as regular trash. Disposal of hazardous waste along with regular waste is illegal and can result in significant fines.

VENDOR LIST FOR SHOP TOWEL RECYCLING AND CLEANING

A number of companies in the Washington Metropolitan area provide shop towel cleaning and recycling services. Provided below is a list of some of the companies with which the Montgomery County MD Department of Environmental Protection is familiar. Other vendors may provide similar or identical products and services. The Montgomery County MD Department of Environmental Protection does not convey and should not be interpreted as conveying approval, endorsement, or recommendation for any of these firms or their respective products.

Service Provider	Phone Number
Ace Uniform	301.345.1234
Cintas	301.322.2255
Coyne Textile Service	800.801.4469
G&K Services (Formerly Crestwear)	703.569.5579
ITSI	301.725.9500
Lord Baltimore Uniform	800.292.1224
Nixon	888.267.7688
Rainbow	800.962.6427
RUS	800.869.8485
Unifirst Uniforms	301.925.9300
Virginia Linen Service	301.925.8800

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Automotive Filter Recycling

Vehicle Maintenance and Repair Series

The Recycling Option

Auto repair shops produce several different types of used filters: engine oil, fuel, transmission and antifreeze (from antifreeze recycling units). You can minimize waste and reduce the potential impact on the environment either by recycling used filters or properly storing and disposing of them.

Recycling is the best management option for used filters. The metal recovered can be reused, saving raw material and energy used for producing new products. Used oil filter canisters can be processed into new steel using one fourth of the energy required for processing virgin iron ore. Contact your supplier, used oil or antifreeze recycler, local salvage/recycling facility, or see the *Vendor List for Auto Repair Shop Recycling and Disposal Services* for more information. Regardless of who collects your used filters always request and keep receipts for your records.

Did You Know?

- Even after draining, a filter can contain 2 ounces of residual oil.
- Over 400 million filters are used in the U.S. each year.
- Filters that immediately drip oil when picked up have not been properly drained

Used Oil Filters

There are two types of used oil filters: terne-plated and non-terne-plated. Terne-plated oil filters (from old and large equipment) contain an alloy of lead and tin. Because some terne-plated filters contain these metals, they must be handled and disposed as hazardous waste.

Waste non-terne-plated oil filters are usually considered non-hazardous as long as they have been drained through the "gravity hot-drained" method. Once drained, they can be recycled or disposed of as a solid waste (check with the Montgomery County MD Division of Solid Waste Services at 301.840.2370 if you have questions).

Properly Drain Filters

If you do not follow this method of draining non-terne plated used oil filters, you must dispose of the used filters as hazardous waste. Gravity hot-drained filters should be crushed, punctured, or dismantled, and left to drain until empty for at least 12 hours at a minimum of 60 degrees or until empty if drained at or near engine operating temperatures.

The code of MD regulations require the following:

(a) Do not mix the filter with any hazardous waste.

(b) Drain the filter through the gravity hot-drain method near operating temperature and in an environment greater than 60 degrees F.

(c) Along with hot draining the filter, you must do one of the following:

- Puncture the filter anti-drain back valve (if present) or the filter dome end and drain.
- Draining followed by crushing the filter
- Dismantling the filter and draining. Remember! Always store used and drained filters in a covered dumpster or other container that prevents rain infiltration.

Never Drain Outdoors!

Improper draining and disposal of filters can result in ground and surface water pollution. Fines resulting from violations of the clean water act start at $25,000 per day and can include jail time. Both ground water and surface water pollution are considered violations of the clean water act!

Transmission and Fuel Filters

Spent transmission and fuel filters are not regulated as hazardous wastes as long as they have been gravity hot-drained. They can then be recycled or disposed of as a solid waste. Check with the Montgomery County Md Division of Solid Waste if you have questions.

Antifreeze Recycling Unit Filters

Unlike used oil, fuel and transmission filters, filters used in antifreeze recycling units may be considered hazardous waste. If you have an antifreeze-recycling unit, you may have to dispose of spent filters. Spent antifreeze recycler unit filters can pick up metals as it cleans the antifreeze, causing the filter to be characterized as hazardous. Have a spent antifreeze filter tested. If the test results say the filter is non-hazardous waste, and if your process and length of time the filter is used does not change, you can rely on the test results for that one sample as proof that waste is not hazardous in the future. Always keep a record of each test result. (See the factsheet *Your Generator Status* for more information. If the test results determine the filters are hazardous, they must be managed as any other hazardous waste. Dry, non-hazardous filters can be recycled or disposed of as a solid waste.

Contact the Division of Solid Waste Services at 301.840.2370 or 2774 for information about the "Eco-Wise" program, which offers a low-cost recycling alternative.

Filters

Type	How Managed
Oil Filters	Hot drain, drum or puncture, crush, drain drum
Antifreeze	Drum
Fuel Filters	Drain, drum
Air Filters	Normal waste
Solvent Tank Filters	Drum
Freon	Normal waste

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Name	Phone	Oil	Filters*	Antifreeze	Aerosol Cans	Hazmat	Batteries
A&A Environmental	410.636.3700	*	*	*	*	*	*
American Battery Corp.	301.840.0623						*
Antifreeze Recyclers Int.	703.670.7224			*			
Antifreeze Technology Systems	301.473.4160			*			
C&R Industries	301.441.4824			*			
Chesapeake Environmental	888.773.2784		*	*			
Clean Harbors	410.244.8200	*	*	*	*	*	*
Clean Venture	410.368.9170	*	*	*	*	*	*
International Petroleum	800.222.2511	*		*			
Mid-States Oil	800.331.5408	*	*	*			
R-Way Services	800.673.8521		*	*	*		
Safety-Kleen	800.638.4440	*	*	*	*	*	
Total Recycling Services	800.486.1080		*		*	*	
Tri-County Industries	301.937.8611	*		*		*	
U.S. Filter	410.284.1717	*	*	*		*	

*** Some vendors may charge more to recycle crushed oil filters.**

Department of
Environmental Protection

Montgomery County
Maryland

Vehicle Maintenance
and Repair Series

Created and Developed by:
Mary Richmond and
David Rotolone,
Montgomery County
Department of Environmental
Protection
Spring 2001
Revised Summer 2002
by: Steve Martin

Introduction Letter

Parts Washing

Aerosol Cans

Refrigerants

Engine, Floor & Vehicle Washing

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Antifreeze Recycling and Disposal

Vehicle Maintenance and Repair Series

Recycle Antifreeze

Did you know that using recycled antifreeze is less expensive than virgin antifreeze and helps reduce our dependence on limited natural resources? In fact, waste antifreeze should be recycled either in an on-site unit, by a mobile service or off-site.

Waste antifreeze may contain heavy metals such as lead, cadmium and chromium in high enough levels to make it a regulated hazardous waste. Antifreeze is not considered hazardous waste if recycled into a closed loop system on site. A hazardous waste may never be dumped on land or discharged into a sanitary sewer, stormdrain, ditch, dry well or septic system.

Dumping waste antifreeze into a stormdrain or waterway, is a violation of the Cleanwater Act. Antifreeze is harmful to all life and is especially deadly to dogs, cats and other domestic animals that like the sweet taste of antifreeze.

The Washington Suburban Sanitary Commission (WSSC) forbids the discharge of antifreeze into the sanitary sewer system. Always use the easy 4- step clean-up method for antifreeze spill cleanups. Contact WSSC at 301.206.4003 for more information.

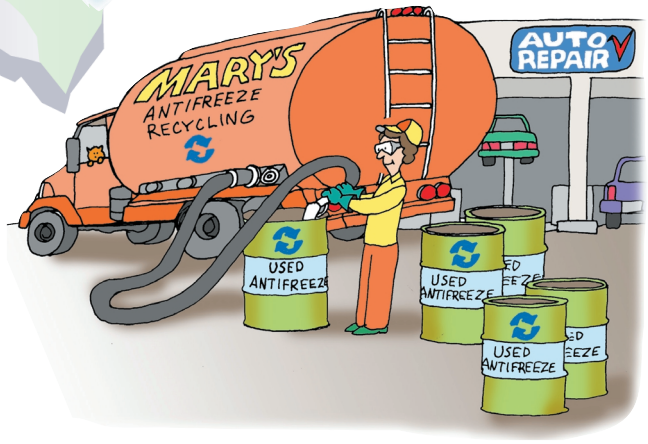
Waste antifreeze should never be disposed of down stormdrains or into surface waters because it causes serious water quality problems and may harm people, pets and wildlife. Dumping of antifreeze is illegal and is punishable by fines of $25,000 per day and possible jail time.

Cause for Concern

Disposal of waste antifreeze is important not only for legal and environmental reasons, but how you treat, store and dispose of your waste antifreeze will help determine your status as a hazardous waste generator.

If you generate any amount of hazardous waste in a calendar month you will become a small quantity generator of hazardous waste and will become subject to the regulatory reporting requirements associated with this status.

If you produce more than 27 gallons (about one-half drum) or 220 pounds of hazardous waste per month you are considered a large quantity generator and will become subject to even more intrusive, time-consuming, and frustrating regulations. See the *Your Generator Status* factsheet for more information about this subject.



The solution to pollution is not dilution! Do not mix antifreeze or any other liquid with water and expect it to become a non-hazardous waste. A non-hazardous waste mixed with a hazardous waste will **always** assume the characteristics of a hazardous waste and must be treated as such.

As always, the best way to dispose of waste antifreeze is by contracting with a licensed recycler. See the attached list for local vendors.

With many on-site and off-site recycling options available, recycling waste antifreeze is always the best option. Waste antifreeze can be recycled by three methods.

On-site recycling: waste antifreeze is recycled in units purchased, located and operated by the facility.

Mobile Recycling Service: a truck equipped with a recycling unit visits the facility and recycles the antifreeze on site.

Off-Site Recycling: waste antifreeze is transported to a specialized recycling company by a (licensed) vendor; these services can also re-supply the facility with recycled antifreeze.

All waste antifreeze recycling methods involve two steps: 1. Removing contaminants either by filtration, distillation, reverse osmosis, or ion exchange and 2. Restoring critical antifreeze properties with additives. Additives typically contain chemicals that raise and stabilize pH, inhibit rust and corrosion, reduce water scaling and slow the breakdown of ethylene glycol. The most appropriate type antifreeze recycling that is suited for your facility is best determined by you.

Managing Recycled Wastes

Antifreeze recycling wastes may be contaminated with metals such as lead, chromium, cadmium, copper, or zinc. Depending on the type of recycling performed, wastes may include filters, sludge or resins. As with all wastes, you should obtain data, or test the waste to determine whether it is hazardous and dispose of it accordingly. Off-site and some mobile recycling service vendors will dispose of the wastes for you. If your vendor manages wastes for you, make sure that proper waste determination and disposal is performed.

Note: There is no single national recycled antifreeze standard that all recycling methods must achieve. Therefore, you should select an antifreeze recycling method after discussing coolant quality specifications and vehicle warranty concerns directly with your recycling service vendors. Some vendors can provide certification letters from vehicle manufacturers or state agencies, or will otherwise guarantee the recycled antifreeze they produce.

Antifreeze Spill Cleanup

Minimize spills and drips, always use drip pans and funnels when transferring antifreeze.

If a spill can be cleaned with three or fewer rags, use them to clean the spill until the floor is dry. Place used rags in properly labeled waste containers and send rags to an industrial laundry. Do not saturate the rags, otherwise you will have drips on the floor as you transfer them to the waste containers.

4-Step Floor Cleanup Method

If the spill contains oil, mop it first, only using a hydrophobic mop and restrict back-and-forth movement of the mop to avoid spreading spill. Transfer collected oil to the properly labeled waste oil container for recycling. If the spill is antifreeze, mop it immediately using a dedicated cloth mop. Transfer collected antifreeze to the properly labeled antifreeze waste container for recycling.

Use rags to dry the floor. Place used rags in properly labeled waste containers and send rags to an industrial laundry. Do not saturate the rags; otherwise you will have drips on the floor as you transfer them to the waste containers.

Use a wet mop only if necessary for final cleaning. Use mild, non-caustic detergent. Caustic detergents are corrosive to skin, eyes and mucous membranes, and can react with other chemicals. Refer to the *Your Generator Status* factsheet for a definition of corrosive products.

Proper storage of waste antifreeze

Test used antifreeze at least one time for hazardous constituents. In particular, test for lead and benzene.

Always keep the results on file.

Segregate used antifreeze from other wastes and always label the container "waste antifreeze." Always keep the container closed with a tight fitting lid and provide containment around the waste antifreeze storage containers to prevent spills from entering storm-drains or surface water.

Always use a permitted hauler for transportation to a permitted facility for recycling, treatment, storage, or disposal. You are responsible for the waste antifreeze from cradle to grave.

Remember!

1. Keep drains covered.
2. Use proper container management.
3. Have the appropriate spill response equipment and supplies. Refer to the MSDS's of each product.
4. Never pour antifreeze into a septic system. The organisms in the system will be damaged.
5. Wear eye protection, clothing that covers exposed skin and rubber gloves when transferring antifreeze and always pour slowly and carefully to avoid splashing.

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Just the Facts About ...

Vendor List for Auto Repair Shop Recycling and Disposal Services

Vehicle Maintenance and Repair Series

A number of companies around the Washington Metropolitan area provide used automotive recycling and disposal services. Provided is a list of some of the companies with which the Montgomery County MD Department of Environmental Protection is familiar. Other vendors may provide similar or identical products and services. The Montgomery County MD Department of Environmental Protection does not convey and should not be interpreted as conveying approval, endorsement, or recommendation for any of these firms or their respective products.

Name	Phone	Oil	Filters*	Antifreeze	Aerosol Cans	Hazmat	Batteries
A&A Environmental	410.636.3700	*	*	*	*	*	*
American Battery Corp.	301.840.0623						*
Antifreeze Recyclers Int.	703.670.7224			*			
Antifreeze Technology Systems	301.473.4160			*			
C&R Industries	301.441.4824			*			
Chesapeake Environmental	888.773.2784		*	*			
Clean Harbors	410.244.8200	*	*	*	*	*	*
Clean Venture	410.368.9170	*	*	*	*	*	*
International Petroleum	800.222.2511	*		*			
Mid-States Oil	800.331.5408	*	*	*			
R-Way Services	800.673.8521		*	*	*		
Safety-Kleen	800.638.4440	*	*	*	*	*	
Total Recycling Services	800.486.1080		*		*	*	
Tri-County Industries	301.937.8611	*		*		*	
U.S. Filter	410.284.1717	*	*	*		*	

*** Some vendors may charge more to recycle crushed oil filters.**

Just the Facts About ...

Cost analysis worksheet for antifreeze recycling

	Baseline Waste Antifreeze Generation	Your Facility
A	Gallons of waste antifreeze generated annually	
	Off-Site Antifreeze Disposal	
B	Cost per gallon for disposal	
C	Gallons of antifreeze (virgin or recycled) purchased annually	
D	Cost per gallon to purchase antifreeze (virgin or recycled)	
E	Total Annual Cost = (A x B) + (C x D)	
	Off-Site Antifreeze Recycling Service	
F	Cost per gallon for off-site recycling	
G	Gallons of antifreeze (virgin or recycled) purchased annually	
H	Cost per gallon to purchase antifreeze (virgin or recycled)	
I	Total annual cost = (A x F) + G x H)	
	Mobile Antifreeze Recycling	
J	Cost per gallon for mobile recycling	
K	Gallons of antifreeze (virgin or recycled) purchased annually	
L	Cost per gallon to purchase antifreeze (virgin or recycled)	
M	Annual waste disposal costs (filers, residual, etc.)	
N	Total annual cost = (A x J) + (K x L) + M	
	On-Site Antifreeze Recycling	
	General	
O	Gallons of regular (r) or extended life (e) antifreeze (virgin or recycled) purchased annually	
P	Cost per gallon to purchase antifreeze (virgin or recycled)	
Q	Annual antifreeze recycling (number of vehicles or batches)	
R	Average time to recycle antifreeze (one vehicle or batch) in hours	
S	Annual maintenance and repair costs	

	Equipment	
T	Purchase and shipping of recycling unit	
U	Unit installation	
	Additives	
V	Annual use rate of regular (r) or extended life (e) additives (gallons or packages per year)	
W	Cost to purchase additives per gallon or per package	
	Filters	
X	Cost to purchase filters	
Y	Annual filter use rate	
Z	Annual cost to test filters	
	Energy	
AA	Unit voltage (volts)	
BB	Unit current (amperes)	
CC	Energy cost (per kilowatt-hour)	
DD	Total energy cost [(AA x BB) / 1,000 x CC x Q x R]	
	Waste and Disposal	
EE	Annual cost to dispose of recycling wastes (other than antifreeze)	
FF	Gallons of waste antifreeze generate per year	
	Calculations	
GG	Total annual cost for on-site recycling [(O x P) + S + (V x W) + (X x Y) + Z + DD + EE + (FF x B or F)]	
HH	On-site unit capital cost (T + U)	
II	Payback period in years for on-site recycling (HH/annual cost difference). Annual cost difference = difference in calculated annual cost for on-site recycling (GG) and alternative method (E, I or N)	

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Just the Facts About ...

Proper Battery Storage and Disposal

Vehicle Maintenance and Repair Series

Recycle Your Batteries

Used Lead Acid Batteries can be classified as hazardous waste under federal and state law. You can avoid the liability and reporting responsibilities associated with hazardous waste storage and disposal by properly recycling your used lead acid batteries. Battery components are toxic and corrosive. Automobile batteries contain 18 pounds of lead and a gallon of sulfuric acid. Lead and sulfuric acid can contaminate the air, soil and water. Direct contact with sulfuric acid can burn the skin and eyes. Exposure to lead in the environment can pose a serious health hazard.

See the attached factsheet Vendor List for *Auto Repair Shop Recycling and Disposal Series* or, contact your battery supplier or check the yellow pages for information about local battery recyclers.

Did you know?

- If you recycle your used lead acid batteries they are not counted in determining the quantity of waste that you generate each month nor do they require a hazardous waste manifest when shipped off your own premises. (However, special requirements do apply if you recycle your batteries on your own premises).
- Reusing or recycling lead acid batteries whenever possible will reduce your disposal costs and possibly generate income for your business. Do not overlook the added benefit of actually conducting business instead of filing reports, and keeping up to date on the latest environmental reporting requirements.
- Up to 97% of a lead acid battery is recyclable?

Are you a small quantity generator of hazardous waste?

Regardless of the amount of hazardous waste generated in any calendar month, under curtain circumstances, you may be required to register your business as a hazardous waste generator. See the fact sheet entitled *Your Generator Status* or contact the Maryland Department of the Environment Hazardous Waste Program at 410.537.3343.

Recycle to reduce your reporting requirements

The average weight of a used lead acid battery is 20 pounds. Always recycle your used lead acid batteries to avoid the hazardous waste generator label. If you generate over 220 lbs of hazardous waste, in a calendar month (which is the equivalent of 11 lead acid batteries), you become a large quantity generator of hazardous waste. Once you are classified as a large quantity generator you become subject to greater reporting requirements under federal, state and local law you will take on substantial legal liability.

Proper Battery Storage

Always store lead acid batteries in a secured, covered location, away from open

flame that is designed to contain leaks and temperature extremes.

Do not stack lead acid batteries, they may crack and leak acid and other hazardous components thereby incurring a potential expensive cleanup.

Keep batteries off the ground to prevent them from coming in contact with water, which may result in contaminated runoff into creeks and streams. Do not store batteries around inside drains or exterior stormdrains. The lead acid in batteries has a pH of less than two. This is considered a hazardous waste and can cause environmental damage and force you into an expensive cleanup.

Improper storage practices can result in potential violations of the Federal Clean Water Act as well as violations of state and local water quality laws.

Should your batteries leak onto the ground, you may face enormous cleanup costs as well as potential criminal and civil penalties. You are responsible for leaking batteries and never assume baking soda or other absorbents used to neutralize spilled acid are safe. The spill residue is still dangerous and must be disposed of as hazardous waste.

Don't assume a battery is completely dry. Always take storage precautions even after the acid has been drained.

Do not smoke or eat in battery storage areas.

Do not accumulate non-hazardous batteries, dispose of them as generated. Store batteries separately from other hazardous material.

Always keep your receipts from haulers and disposal sites.

Keep in mind: You always assume responsibility for your waste stream and any improper storage and disposal practices. Do not add to your problems by generating more hazardous waste then necessary. Follow these simple practices and reduce your reporting requirements and disposal problems.

Please note: Leaking lead acid batteries are considered hazardous waste!

Low cost disposal assistance may be available for small quantity generators of hazardous waste under the EcoWise program. For more information, contact the Montgomery County Division of Solid Waste Services at 301.840.2370 or 2774.

Remember! By following these few, simple measures you can make your life easier and your business run more profitably.

Warning!

Illegal Dumping Is a Crime! The penalty can be a $25,000 fine and up to one year in jail or both. Please do the right thing!

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Chesapeake Environmental	888.773.2784		*	*			
Clean Harbors	410.244.8200	*	*	*	*	*	*
Clean Venture	410.368.9170	*	*	*	*	*	*
International Petroleum	800.222.2511	*		*			
Mid-States Oil	800.331.5408	*	*	*			
R-Way Services	800.673.8521		*	*	*		
Safety-Kleen	800.638.4440	*	*	*	*	*	
Total Recycling Services	800.486.1080		*		*	*	
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Tire Recycling and Storage

Vehicle Maintenance and Repair Series

The Issue with Tires

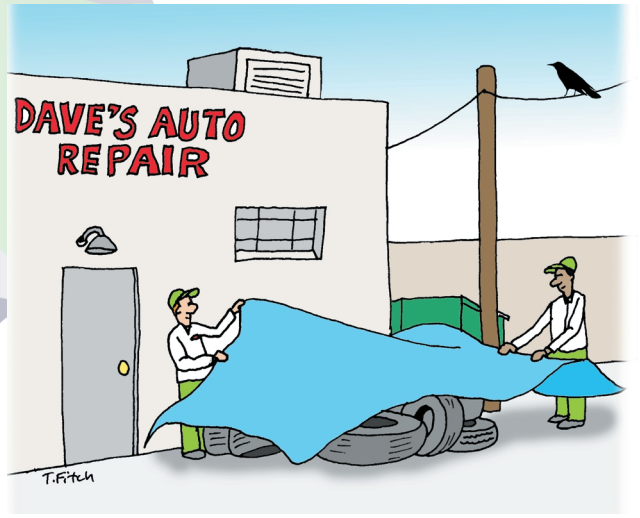
The improper storage of scrap tires can create health, environmental and safety risks to you. Piles of scrap tires exposed to the elements create an ideal breeding ground for mosquitoes that are known carriers of West Nile Virus and other diseases. Scrap tires also provide perfect habitat for rats and other vectors and present a fire hazard when improperly stored. Perhaps the greatest danger posed by a scrap tire stockpile is the possibility of a fire. Burning tires release large quantities of petroleum and other chemicals. Burning tires create thick, black toxic smoke as well as large discharges of contaminated oil. The contaminated oil can enter surface and groundwater causing serious pollution problems. Once the fire starts to burn, it can be next to impossible to extinguish and the cost to remediate the site can be prohibitive. The Maryland Scrap Tire Recycling Act of 1991 prohibits the storage or hauling of scrap tires without a license from the Maryland Department of the Environment (MDE). In addition, it is illegal to dispose of tires by burial in county or municipal landfills.

Did You Know?

- Over 270 million tires are scrapped annually in the U.S.?
- An additional 3.4 million tons of waste is generated annually and must be disposed.
- Currently the U.S. has a stock pile of over 2 **billion** scrap tires.
- 95% of all scrap tires are collected through the commercial waste stream.

Proper Storage

If you store scrap tires on your premises, keep them under cover to prevent water build up and isolate them to reduce the threat of fire. You must obtain a scrap tire collection facility license from MDE if you store five or more tires at any time. There is no fee for this permit. Contact the MDE scrap tire program at 410.537.3315 for details.



Proper Disposal of Scrap Tires

You are responsible for the proper disposal of your scrap tires. If tires from your facility are dumped illegally you will be held legally responsible unless you can provide written proof of your intent to dispose of these tires in a proper manner.

You must hire, or become a licensed tire scrap hauler to remove scrap tires generated by your business. Ask to see a copy of the hauler's license prior to contracting with them. Contact MDE at 410.537.3315 or at www.mde.state.md.us for a list of licensed scrap tire haulers or see the reverse for a list of local haulers.

Always obtain receipts from your hauler, which will verify both the final disposal site and scrap tire collection permit number.

Scrap Tire Facts

Scrap tires are an excellent fuel source, which can provide clean fuel for power plants and cement kilns.

Scrap tires are easily recycled into ground cover for playgrounds, road base, highway sound barriers, walking paths in parks and equestrian cross country courses and arenas.

Shredded scrap tires can be used as a drainage layer for landfills.

Wildlife managers have used scrap tires to construct artificial reefs, to provide habitat for fish.

Help is on the Way!

While scrap tires present storage and disposal problems, they are not insurmountable. The Department of Environmental Protection (DEP) can and will provide information to assist you in developing storage and disposal options. Contact DEP at 240.777.7770 for assistance.

Warning!

Illegal dumping of tires is a crime! The penalty can be a $25,000 fine and up to one year in jail or both. Please do the right thing!

VENDOR LIST FOR COMMERCIAL LICENSED SCRAP TIRE HAULERS

A number of companies around the Washington Metropolitan area provide scrap tire hauling and recycling services. Provided is the list of licensed scrap tire haulers generated by the Maryland Department of the Environment. Other vendors may provide similar or identical services. The Montgomery County Department of Environmental Protection does not convey and should not be interpreted as conveying approval, endorsement, or recommendation for any of these firms or their respective services. For the complete list of licensed haulers contact the Maryland Department of the Environment at 410.537.3315 or at www.mde.state.md.us.

HAULER NAME	LOCATION	LICENSE NUMBER	PHONE NUMBER
Emanuel Tire Co.	Baltimore, MD	1998RTH00028	410.947.0660
JDP Ent.	Ranson, WV	2001RTH04786	304.728.3841
Metal Pro	Springfield, VA	1999RTH00011	703.451.8300
New Ideal Landscape Co.	Pikesville, MD	1999RTH00378	443.677.2808
PG Tire Inc.	Laurel, MD	2001RTH04834	301.317.1817
Proco Co.	Fairfax, VA	1999RTH04525	703.503.2211
S & S Tire Service	Frederick, MD	1998RTH04048	301.696.0697
Turbo Haul Inc.	Beltsville, MD	1998RTH04098	301.421.9484

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Vehicle Maintenance and Repair Compliance and Pollution Prevention Report

Department of Environmental Protection

Montgomery County Maryland

Facility: _____

Address: _____

_____

_____

_____

Contact Name: _____

Phone: _____

Date: _____

Investigator: _____

Parts Washing

Type of parts washing system facility uses: _____
Size of parts washing system: _____

Units having a capacity of 2000 gallons or more must be registered with the Maryland Department of the Environment's Air Management Administration.

If Cold Solvent Sink-Top Degreasing Unit (operated at ambient temperature)

Type of solvent used: _____

Copy of MSDS provided: _____

Is it a halogenated solvent? Yes_____No_____

COMAR 26.11.19.09D prohibits the use of a halogenated substance that is a VOC.

Is the vapor pressure greater than 1 mm Hg @ 20 degrees Celsius (0.019 psia)?
Yes_____No_____Vapor Pressure_____

COMAR 26.11.19.09D prohibits a person from using any degreasing material that exceeds this vapor pressure.

Does the facility have good operating practices implemented to minimize spills and evaporation of VOC degreasing materials? Yes_____ No _____

COMAR 26.11.19.09D requires that at minimum the good operating practices: include covers, lids, or other methods of minimizing evaporative losses, and reducing the time and frequency during which parts are cleaned. These operating practices must be written and displayed so they are visible to the operator.

Reviewed P2 alternatives? Yes_____ No_____

I*f Vapor Solvent Degreasing Unit* (application of heat)

Type of solvent used: _____

Is it a VOC degreasing material? Yes_____ No _____

If yes, is the vapor degreasing unit equipped with:

A condenser, or an air pollution control device with an overall control efficiency of not less than 90 %? Yes_____ No_____ **Required by COMAR 26.11.19.09E**

Does the vapor degreasing unit include separate enclosed chambers that allow the draining of the parts being cleaned, capture the vapors, or other procedures to minimize evaporative losses of degreasing materials?
Yes_____ No_____ **Required by COMAR 26.11.19.09E**

Reviewed P2 alternatives? Yes_____ No_____

For all parts degreasing units:

Last two solvent pickup dates: _____ _____

Quantities of material picked up: _____ _____

Tested for hazardous waste: Yes_____ No_____

Name of hauler: _____

EPA ID number: _____

Brake Washing

What method does the shop use for brake washing? _____

Does the shop use an aerosol solvent? Yes _____ No_____

If yes, how are the aerosol cans being disposed of? _____

The shop is required to empty the cans prior to disposal.

Does the shop use a solvent system? Yes_____ No_____

If yes, how is the solvent disposed? _____

Last two disposal dates: _____ _____

Quantities disposed of: _____ _____

Tested for hazardous waste: Yes_____ No_____

Hauler: _____ EPA ID number: _____

If yes to either, reviewed P2 alternatives: Yes_____ No_____

Aerosol Cans

Does the shop use aerosol cans? Yes_____ No_____

Method of disposal: _____

All cans must be emptied - if not they may be considered hazardous waste.

Reviewed P2 alternatives: Yes_____ No_____

Air Conditioning Repair

Does the shop service air conditioners? Yes_____ No_____

If yes:

Do the technicians have their EPA certification? Yes_____ No_____

Name of certification program: _____ Technicians name: _____

Certification number: _____ Expiration date: _____

Is the shop using EPA-approved recovery and recycling equipment? Yes_____ No_____

Name and model number(s) of AC equipment:

R-12: _____

R-134a: _____

Does the shop keep records of any air conditioning services done? Yes_____ No_____

Auto body shops must certify to EPA that they own approved equipment. If refrigerant is recovered and sent to a reclamation facility, the name and address of that facility must be retained.

Name of reclamation facility if applicable: _____

Name(s) of refrigerant(s) used: _____

Is refrigerant EPA-approved? Yes_____ No_____

If refrigerant is alternative to CFC-12, are the following "use conditions" being followed:

Unique fittings: Yes_____ No_____

Labels: Yes_____ No_____ Color: _____ All information: Yes_____ No_____

Original refrigerant removed: Yes_____ No_____

Compressor shutoff switch: Yes_____ No_____

Barrier hoses: Yes_____ No_____ (for HCFC-22 blends)

1990 Clean Air Act requirements (Sections 608 and 609)

Does the shop dispose of used refrigerant recycler filters as hazardous waste? Yes_____ No_____

Prior to disposal, the shop must make a determination if the filters are hazardous waste. If they prove to be hazardous, they must be disposed of as hazardous waste. If they are non-hazardous, they can be dried and landfilled.

Name of hauler: _____ EPA ID number: _____

Wastewater

NPDES general stormwater permit on site? Yes_____ No_____
Permit conditions reviewed? Yes_____ No_____
Spill prevention plan available? Yes_____ No_____
Car washing on site? Yes_____ No_____
Wash water drains to: _____
Wash water recycled? Yes_____ No_____
Interior floor washing method? _____
Floor drains present? Yes_____No_____ How many and what types? _____
Drains lead to: _____
Dye test performed as confirmation? Yes_____ No_____
WSSC permit required? Yes_____ No_____ Permit number: _____
Nearest outfall location? _____
Outfall sampling conducted on: _____ (attach outfall monitoring sheet)
Location of storm drain application of No Dumping sign_____

Shop Towels and Absorbents

Shop towel service used? Yes_____ No_____
Name of Laundry Service? _____
Dirty shop towels stored in a fireproof self-closing container? Yes_____ No_____
If no, what type container is used to store dirty shop towels? _____
Are spill absorbent materials kept on site? Yes_____ No_____
Types of absorbent materials kept on site? _____
Disposal method for absorbents? _____
Absorbents containing gas/solvent disposed of as hazardous waste? Yes_____ No_____
4-step cleanup method explained? Yes_____ No_____

Automobile Filter Recycling

Method of recycling/disposal? _____
Are filters mixed with hazardous waste? Yes_____ No_____
Are filters drained by initiating the draining with the oil near operating temperature and conducting the draining in an environment warmer than 60 degrees F? Yes_____ No_____
Which of the following methods are used in conjunction with draining the oil filter?
Puncturing the filter anti-drain back valve or the filter dome end and draining? Yes_____ No _____
Draining, followed by crushing the filter? Yes_____ No_____
Dismantling the filter and draining? Yes_____ No_____
And, filter has been drained for at least 12 hours as required by COMAR 26.13.02.04-1A(14) ?
Yes_____ No_____
Name, address and phone number of filter recycling company?

_____

_____
Last two pickup invoices available for review? Yes_____ No_____
Dates of last two pickups and quantities of filters collected?

_____

Batteries

Current number of batteries on site: _____
Average number of batteries on site: _____
Average storage time? _____
Where are batteries stored? _____
Stored in a secure/covered area? Yes_____ No_____
Are batteries off the ground? Yes_____ No_____
Secondary containment? Yes_____ No_____
Broken batteries present? Yes_____ No_____
Are batteries recycled? Yes_____ No_____
How often are batteries picked up? _____
Name, address and phone number of recycling company:
_____
_____
Last two pickup invoices available for review? Yes_____ No_____
Dates of last two pickups and quantities of batteries collected?
_____
If batteries are not recycled, are they counted as hazardous waste? Yes_____ No_____

Tire Recycling and Storage

Does the facility change tires and generate scrap tires? Yes_____ No_____
Quantity of scrap tires currently on site? _____
Average number of scrap tires on site? _____
Are the scrap tires under cover? Yes_____ No_____
Are the scrap tires free of pooled water? Yes_____ No_____
Is the scrap tire storage area isolated and free of ignition sources? Yes_____ No_____
Does the facility have a scrap tire collection license? Yes_____ No_____

License Number: _____ Date Issued: _____

Does the facility have a scrap tire hauler license? Yes_____ No_____

License Number: _____ Date Issued: _____
If no, provide the name, address, phone number and license number of the scrap tire hauler used:
_____
_____
Last two pickup invoices available for review? Yes_____ No_____
Dates of last two pickups and quantities of scrap tires removed?
_____

Hazardous Materials

Does the shop generate hazardous waste? Yes_____ No_____

Quantity of hazardous waste generated per month: _____
(attach Generator Status Worksheet)

Reviewed Regulatory Requirements? Yes_____ No_____
If small quantity generator, is shop aware of EcoWise program? Yes_____ No_____

If large quantity generator, EPA ID number: _____

Hazardous Waste Hauler: _____ EPA ID number: _____

Hazardous Waste Delivery Site: _____ Permit number: _____

Does the shop store hazardous materials? Yes_____ No_____

Montgomery County LEPC Hazardous Materials Use Certificate Number: _____

Are all materials stored in accordance with MSDS specifications? Yes_____ No_____
Are spill kits present and spill procedures noted in accordance with MSDS for each material?
Yes_____ No_____
Is secondary containment provided where applicable? Yes_____ No_____
Are incompatible materials segregated? Yes_____ No_____

Hazardous Materials, Employees "Right-to-Know"

Does the facility have a MSDS for all hazardous materials on site? Yes_____ No_____

Does the facility have a chemical information list? Yes_____ No_____
Is the list arranged in alphabetical order according to common name? Yes_____ No_____
Does the list contain the chemical name? Yes_____ No_____
Does the list identify the work area in which the hazardous chemical is found? Yes_____ No _____
Has the list been sent to MDE as required? Yes_____ No_____
Are new materials added to the chemical information list within 30 days? Yes_____ No_____

Are all containers of hazardous substances at the facility properly labeled? Yes_____ No_____

Does the facility have an employee training program? Yes_____ No_____
Has training been given to all current employees? Yes_____ No_____
Is initial training given to new employees prior to their first assignment? Yes_____ No_____
Does the facility document and keep records of the training given? Yes_____ No_____

Does the facility have a written hazard communication program? Yes_____ No_____

Oil Recycling and Disposal

Size, type and location of waste oil tank:

_____

Evidence of spills/leaks? Yes_____ No_____
How are the oil drains emptied into the tank?

_____

Secondary containment around tank? Yes_____ No_____
Spill containment kits available? Yes_____ No_____
Name, address and phone number of recycler/disposal company:

_____

_____

Last two shipping manifests available for review? Yes_____ No_____
Dates of last two pickups and quantities of oil collected?

_____

Antifreeze Recycling and Disposal

Method of antifreeze recycling? Off-site Mobile On-site
Number, type and location of used antifreeze containers:

_____

Evidence of spills or leaks? Yes_____ No_____
Secondary containment? Yes_____ No_____
Containers sealed? Yes_____ No_____
Containers properly labeled as used antifreeze? Yes_____ No_____
Spill containment kits available? Yes_____ No_____
Following 4-step method? Yes_____ No_____
Designated antifreeze mop available? Yes_____ No_____
Collected antifreeze from spills drained into recycling container? Yes_____ No_____
Name, address and phone number of recycling company:

_____

_____

Last two shipping manifests available for review? Yes_____ No_____
Dates of last two pickups and quantities of antifreeze collected?

_____

If antifreeze is not recycled, has it been tested as hazardous waste? Yes_____ No_____

Department of
Environmental Protection

Montgomery County
Maryland

Vehicle Maintenance
and Repair Series

Created and Developed by:
Mary Richmond and
David Rotolone,
Montgomery County
Department of Environmental
Protection
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Revised Summer 2002
by: Steve Martin

Introduction Letter

Parts Washing

Aerosol Cans

Refrigerants

Engine, Floor & Vehicle Washing

Spill Prevention & Cleanup

Your Generator Status

Managing Used Oil

Shop Towels & Absorbents

Automotive Filter Recycling

Antifreeze Recycling & Disposal

Battery Storage & Disposal

Tire Recycling & Storage

Checklist

Frequently Called Numbers

Frequently Called Numbers

Montgomery County Government

Department of Environmental Protection

General Number	240.777.7770
To Report a Spill	240.777.7770
Environmental Incident Hotline (24 hour recording)	240.777.3867
Illegal Dumping	240.777.7770
Water Pollution	240.777.7770
Hazardous Waste Disposal	240.777.7770
Air Quality Violations	240.777.7770
After Hours Incidents (24 hour recording)	240.777.3867

Department of Permitting Services

Use and Occupancy Permits	240.777.6240
Sediment Control Permits	240.777.6366
Sediment Violations	240.777.6260

Division of Solid Waste Services

EcoWise Program	301.840.2370 or 2774
Transfer Station	301.840.2370
Recycling Information	240.777.6410
Business Recycling	240.777.6400

Department of Fire/Rescue Services

Hazardous Materials Use Certificate	240.777.2300
Above Ground Storage Tanks	240.777.2457

Washington Suburban Sanitary Commission (WSSC)

Sewer Overflows	301.206.4002
Permit Information	301.206.4003
Discharge Questions (Industrial Waste)	301.206.8526

Maryland Department of the Environment (MDE)

General Number	800.633.6101
Air Permits	410.537.3230
NPDES Discharge Permits	410.537.3233
Scrap Tire Permits	410.537.3315
Spills	410.333.2950
After Hours Spills	410.974.3551
Under Ground Storage Tanks	410.537.3386
Above Ground Storage Tanks	410.537.3388
Small Business Assistance Program	410.537.4158
Hazardous Waste Program	410.537.3343

In the event of a large spill or if the spill enters a storm drain or other waterway call 911 immediately.